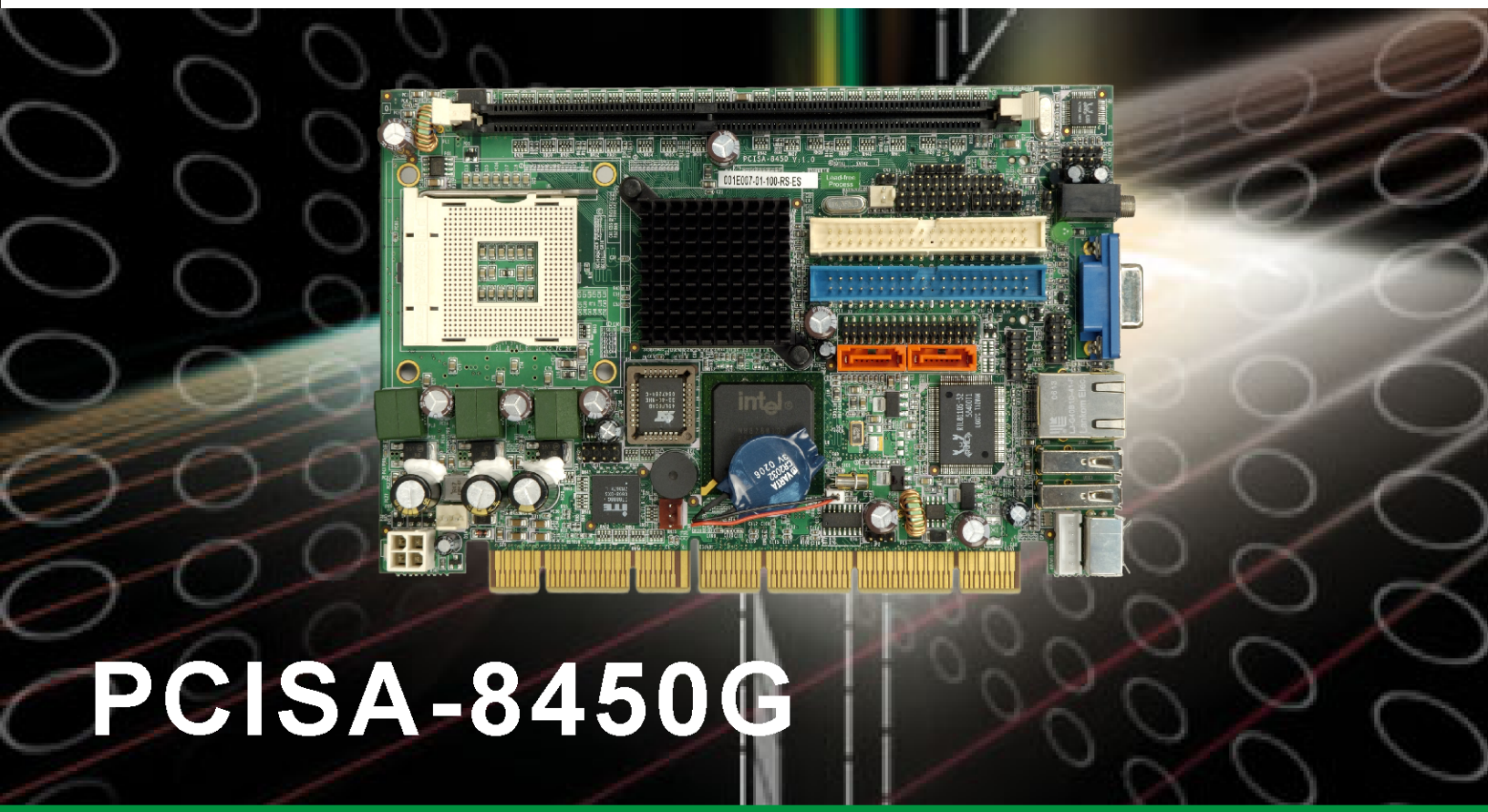
IEI Technology Corp.



PCISA-8450G

PCISA Socket 478 CPU Card

with VGA, Single GbE, SATA RAID, USB 2.0 and Audio

User Manual

Rev. 1.1 November, 2006

RoHS Lead Free

REVISION HISTORY

Title	PCISA-8450G Intel® Pentium® 4/ Celeron® D CPU Card	
Revision Number	**Description**	**Date of Issue**
1.0	Initial release	September 2006
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Glossary

AC ’97	Audio Codec 97
ACPI	Advanced Configuration and Power Interface
APM	Advanced Power Management
ARMD	ATAPI Removable Media Device
ASKIR	Shift Keyed Infrared
ATA	Advanced Technology Attachments
BIOS	Basic Input/Output System
CFII	Compact Flash Type 2
CMOS	Complementary Metal Oxide Semiconductor
CPU	Central Processing Unit
Codec	Compressor/Decompressor
COM	Serial Port
DAC	Digital to Analog Converter
DDR	Double Data Rate
DIMM	Dual Inline Memory Module
DIO	Digital Input/Output
DMA	Direct Memory Access
EIDE	Enhanced IDE
EIST	Enhanced Intel SpeedStep Technology
FDD	Floppy Disk Drive
FDC	Floppy Disk Connector
FFIO	Flexible File Input/Output
FIFO	First In/First Out
FSB	Front Side Bus
IrDA	Infrared Data Association
HDD	Hard Disk Drive
IDE	Integrated Data Electronics
I/O	Input/Output
ICH4	I/O Controller Hub 4
L1 Cache	Level 1 Cache
L2 Cache	Level 2 Cache
LCD	Liquid Crystal Display
LPT	Parallel Port Connector
LVDS	Low Voltage Differential Signaling
MAC	Media Access Controller
OS	Operating System
PCI	Peripheral Connect Interface
PIO	Programmed Input Output
PnP	Plug and Play
POST	Power On Self Test
RAM	Random Access Memory
SATA	Serial ATA
S.M.A.R.T	Self Monitoring Analysis and Reporting Technology
SPD	Serial Presence Detect
S/PDI	Sony/Philips Digital Interface
SDRAM	Synchronous Dynamic Random Access Memory
SIR	Serial Infrared
UART	Universal Asynchronous Receiver-transmitter
USB	Universal Serial Bus
VGA	Video Graphics Adapter

Chapter

1

Introduction

1.1 PCISA-8450G CPU Card Overview

The PICMG 1.0 form factor PCISA-8450G Intel® Pentium® CPU platform is fully equipped with a high performance processor and advanced multi-mode I/Os. The PCISA-8450G is designed for system manufacturers, integrators, and VARs that want performance, reliability, and quality at a reasonable price.

1.1.1 PCISA-8450G CPU Card Applications

The PCISA-8450G CPU card is designed for use in industrial applications where board expansion is critical and operational reliability is essential.

1.1.2 PCISA-8450G CPU Card Benefits

Some of the PCISA-8450G CPU card benefits include,

- providing access to multiple PCI and ISA expansion slots for easy system expansion
- operating reliably in harsh industrial environments with ambient temperatures as high as 60°C
- rebooting automatically if the BIOS watchdog timer detects that the system is no longer operating

1.1.3 PCISA-8450G CPU Card Features

Some of the PCISA-8450G CPU card features are listed below:

- Complies with PICMG 1.0
- Complies with RoHS
- Supports Socket 478 Intel® Pentium® 4/Intel® Celeron® D CPUs
- Supports a maximum front side bus (FSB) speed up to 533MHz
- Supports up to 1GB of 333MHz single channel DDR memory
- Comes with one high performance gigabit Ethernet (GbE) controller
- Supports two SATA channels with transfer rates up to 1.5Gb/s
- Supports four USB 2.0 connectors

1.2 PCISA-8450G CPU Card Overview

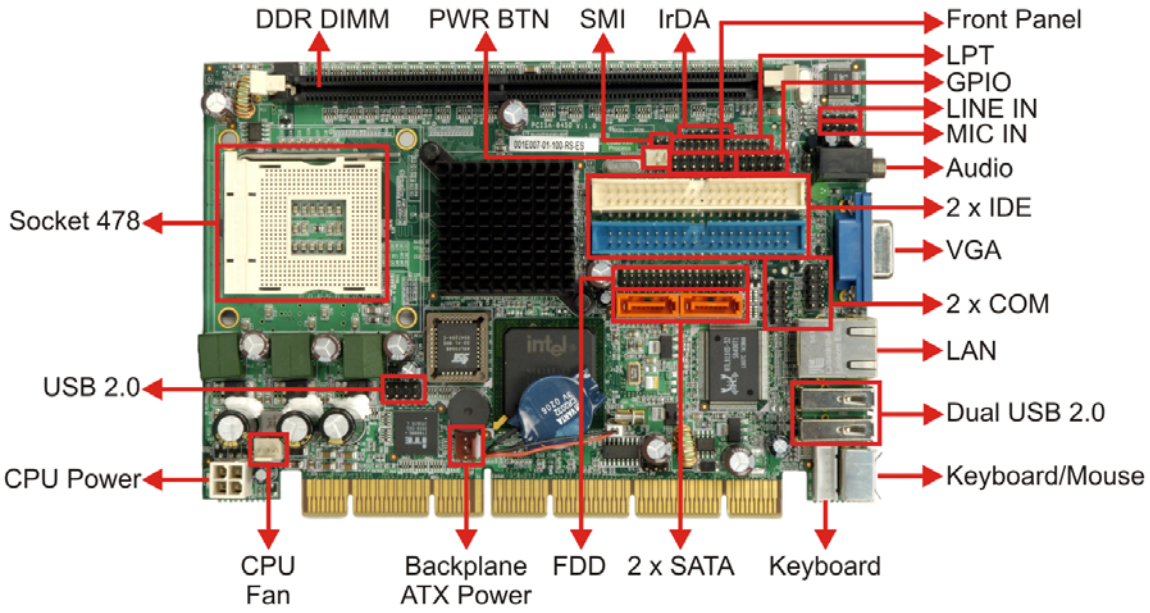

Figure 1-1 PCISA-8450G CPU Card Overview (Front Side)

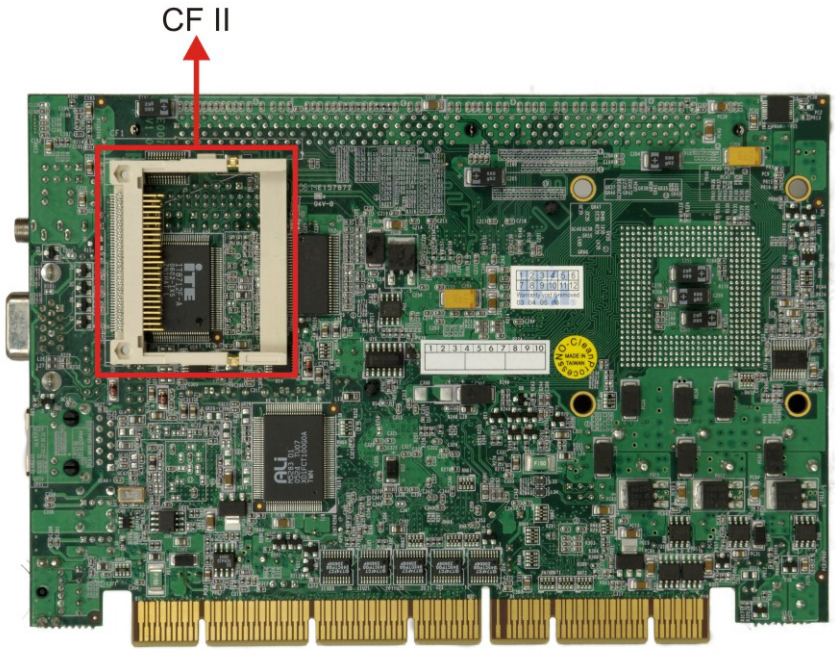

Figure 1-2 PCISA-8450G CPU Card Overview (Solder Side)

1.2.1 PCISA-8450G CPU Card Connectors

The PCISA-8450G CPU card has the following connectors onboard:

- 1 x ATX 12V connector
- 1 x CPU cooling fan connector
- 1 x CFII type compact flash connector (solder side)
- 1 x IrDA connector
- 2 x IDE device connectors
- 1 x FDD connector
- 2 x RS-232 connectors
- 1 x Parallel port connector
- 1 x Front panel connector
- 1 x ATX backplane power connector
- 2 x SATA connectors
- 1 x USB connector
- 1 x GPIO connector
- 1 x LINE_IN connector
- 1 x MIC_IN connector
- 1 x Keyboard connector

The PCISA-8450G CPU card has the following connectors on the card rear panel:

- 1 x PS/2 connector
- 1 x VGA connector
- 1 x Audio connector
- 1 x RJ-45 Ethernet connector
- 2 x USB ports

The location of these connectors on the CPU card can be seen in **Figure 3-21**. These connectors are fully described in **Chapter 2**.

1.2.2 Technical Specifications:

PCISA-8450G CPU card technical specifications are listed in **Table 1-1**. Detailed descriptions of each specification can be found in **Chapter 2**.

SPECIFICATION	
CPUs Supported	Intel® Pentium® 4/Intel® Celeron® D
Chipsets	Northbridge: Intel® 845GV Southbridge: Intel® ICH4
I/O Controller	ICH4
Graphics Support	Intel® Extreme Graphic II Integrated Graphic Engine
Memory	One DDR memory module (Max. 1GB)
PCI Bus Interface	33MHz, Revision 2.3
Serial ATA (SATA)	Two SATA channels with 1.5Gb/s transfer rates
HDD Interface	Two IDE channels supports four Ultra ATA 100 devices
Floppy Disk Drive (FDD)	Supports FDD
USB Interfaces	Two USB 2.0 connectors support four USB 2.0 devices
Serial Ports	Two COM ports
Real Time Clock	256-byte battery backed CMOS RAM
Hardware Monitoring	Cooling fan, temperature and system voltages
Power Management	Supports Advanced Configuration and Power Interface (ACPI) Specifications Revision 2.0
Infrared Support	One Infrared Data Association (IrDA) interface
Ethernet	Realtek RTL8110SC GbE
BIOS	AMI flash BIOS
Physical Dimensions	127.6mm x 185mm (width x length)
Operating Temperature	Minimum: 0ºC (32°F) Maximum: 60°C (140°F)
Audio Interfaces	One Audio Codec ’97 (AC’97) version 2.3 connector

Table 1-1: Technical Specifications

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Chapter

2

Detailed Specifications

2.1 Compatible IEI Backplanes

The PCISA-8450G CPU card is compatible with all IEI PICMG1.0 backplanes. For more information on these backplanes, please visit the IEI website or contact the CPU card reseller or vendor.

2.2 CPU Support

Table 2-1 lists the CPUs supported by the PCISA-8450G CPU card.

Mfg.	Model	Max. Speed	L2 Cache	Max. FSB	Socket
Intel®	Pentium® 4	2.8GHz	512KB	533MHz	478
Intel®	Celeron® D	3.2GHz	256KB	533MHz	478

Table 2-1: Supported CPUs

2.2.1 Intel® Pentium® 4

The Intel® Pentium® 4 CPU comes with the following features:

- Hyper-Threading Technology (HT Technology) ensures greater performance
- SpeedStep® Technology improves overall system power management
- Execute Disable Bit technology prevents certain classes of malicious "buffer overflow" attacks when combined with a supporting operating system.

2.2.2 Intel® Celeron® D

The Intel® Celeron® D CPU comes with the following features:

- Advanced Dynamic Execution Technology keeps the execution units executing instructions
- Intel® Streaming SIMD Extensions accelerates 3D graphics performance
- Execute Disable Bit Technology prevents certain classes of malicious "buffer overflow" attacks when combined with a supporting operating system.

Table 2-2 lists the Intel® Celeron® D processors supported by the PCISA-8450G CPU card.

Processor Number	Power	Architecture	L2 Cache	Speed	FSB	Execute Disable Bit
335	Normal	90 nm	256 KB	2.80 GHz	533 MHz	No
330	Normal	90 nm	256 KB	2.66 GHz	533 MHz	No
325	Normal	90 nm	256 KB	2.53 GHz	533 MHz	No
320	Normal	90 nm	256 KB	2.40 GHz	533 MHz	No
315	Normal	90 nm	256 KB	2.26 GHz	533 MHz	No
310	Normal	90 nm	256 KB	2.13 GHz	533 MHz	No

Table 2-2: Supported Celeron® D CPUs

2.3 Onboard Chipsets

2.3.1 Northbridge and Southbridge Chipsets

The following chipsets are preinstalled on the card:

- **Northbridge**: 845GV
- **Southbridge**: ICH4

The following two sections (**Section 2.3.2** and **Section 2.3.3**) list some of the features of the 845GV and the ICH4 chipsets. For more information on these two chipsets please refer to the Intel® website.

2.3.2 845GV Northbridge Chipset

The 845GV northbridge chipset comes with the following features:

- Host Interface Support
- System Memory Controller (SDR and DDR)
- AGP Interface
- Integrated Graphics
- Analog Display Support
- Digital Display Channels

2.3.3 ICH4 Southbridge Chipset

The ICH4 southbridge chipset comes with the following features:

- PCI Bus Interface
- Integrated LAN Controller
- Integrated IDE Controller
- USB 2.0
- AC-Link for Audio and Telephony CODECs
- Interrupt Controller
- 1.5 V operation with 3.3 V I/O
- Timers Based on 82C54
- Power Management Logic
- External Glue Integration
- Enhanced Hub Interface Buffers Improve Routing flexibility (Not available with all Memory Controller Hubs)
- Firmware Hub (FWH) Interface Supports BIOS memory size up to 8 MB
- Low Pin Count (LPC) Interface
- Enhanced DMA Controller
- Real-Time Clock
- System TCO Reduction Circuits
- SMBus
- GPIO

2.4 Data Flow

Figure 2-1 shows the data flow between the two onboard chipsets and other components installed on the CPU card and described in the following sections of this chapter.

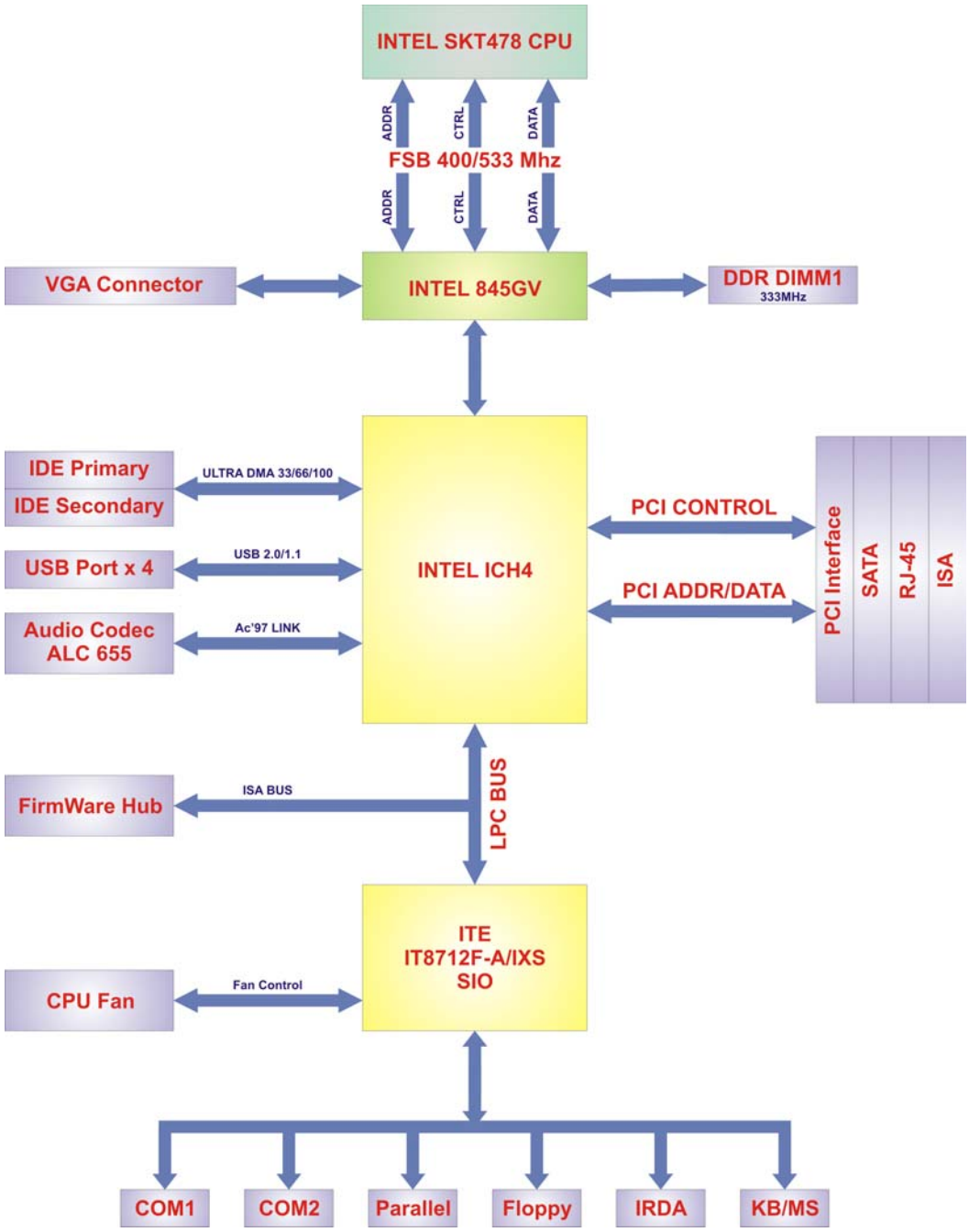

Figure 2-1: Data Flow Block Diagram

2.5 Graphics Support

The graphics features listed below are all integrated on the 845GV northbridge chipset.

- 3D Setup and Render Engine
  - Discrete Triangles, Strips and Fans Support
  - Indexed Vertex and Flexible Vertex Formats
  - Pixel Accurate Fast Scissoring and Clipping Operation
  - Backface Culling Support
  - Supports D3D and OGL Pixelization Rules
  - Anti-Aliased Lines Support
  - Sprite Points Support
- High Quality Texture Engine
  - Per Pixel Perspective Corrected Texture Mapping
  - Single Pass Texture Compositing (Multi-Textures) at rate
  - 12 Levels of Detail MIP Map Sizes from 1x1 to 2Kx2K
  - All texture formats including 32-bit RGBA
  - Alpha and Luminance Maps
  - Texture ChromaKeying
  - Bilinear, Trilinear, and Anisotropic MIPMapped Filtering
  - Cubic Environment Reflection Mapping
  - Embossed Bump-Mapping
  - DOT3-based Bump-Mapping
  - DXTn Texture Decompression
  - FXT1 Texture Decompression
- 3D Graphics Rasterization Enhancements
  - 200 MegaPixel/Sec Fill Rate
  - Flat and Gouraud Shading
  - Color Alpha Blending for Transparency
  - Vertex and Programmable Pixel Fog and Atmospheric Effects
  - Color Specular Lighting
  - Z Bias Support
  - Dithering
  - Anti-Aliasied Lines
  - 16- and 24-bit Z Buffering
  - 16- and 24-bit W Buffering

- 8-bit Stencil Buffering
- Double and Triple Render Buffer Support
- 16- and 32-bit Color
- Destination Alpha
- Maximum 3D Resolution Supported: 1600x1200x32 at 85 Hz
- Fast Clear Support

- 2D Graphics
  - Optimized 256-bit BLT Engine
  - GDI+* Feature Support
  - Alpha Stretch Blitter
  - Anti-Aliased Lines
  - 32-bit Alpha Blended Cursor
  - Programmable 3-Color Transparent Cursor
  - Color Space Conversion
  - 8-, 16- and 32-bit Color
  - ROP Support
- Video DVD/PC-VCR
  - Dynamic Bob and Weave Support for Video Streams
  - Synclock Display and TV-out to video source
  - Source Resolution: up to 720x480 with 2-vertical taps
  - Software DVD at 30 fps, Full Screen
- Video Overlay
  - Single Scalable Overlay
  - Multiple Overlay Functionality provided via Stretch Blitter (PIP, Video Conferencing, etc.)
  - 5-tap Horizontal, 2-tap Vertical Filtered Scaling
  - Independent Gamma Correction
  - Independent Brightness/Contrast/Saturation
  - Independent Tint/Hue Support
  - Destination Color-keying
  - Source Chroma-keying
  - Maximum Source Resolution: 720x480 (576) Maximum Overlay Display Resolution: 1600x1200x32 at 60 Hz and 1280x1024x32 at 85 Hz

2.6 Memory Support

The PCISA-8450G CPU has one 184-pin dual inline memory module (DIMM) socket and supports an un-buffered DDR DIMM with the following specifications:

- Maximum RAM: 1GB
- DIMM Transfer Rates: 266MHz, 333MHz

2.7 PCI Bus Interface Support

The PCI bus on the PCISA-8450G CPU card has the following features:

- 33MHz Revision 2.3 is implemented
- Up to six external bus masters are supported
- Maximum throughput: 133MB/sec
- Master devices: Maximum of six with three implemented
- One PCI REQ/GNT pair can be given higher arbitration priority (intended for external 1394 host controller)
- 44-bit addressing using the DAC protocol supported

2.8 GbE Ethernet

The Realtek RTL8110SC GbE controller combines a triple-speed IEEE 802.3 compliant Media Access Controller (MAC) with a triple-speed Ethernet transceiver, 32-bit PCI bus controller, and embedded memory. The controller has state-of-the-art DSP technology and mixed-mode signal technology and it offers high-speed transmission over CAT 5 UTP cables or CAT 3 UTP (10Mbps only) cables. The GbE controller specifications are below.

- Integrated 10/100/1000 transceiver
- Auto-Negotiation with Next Page capability
- Supports PCI rev.2.3, 32-bit, 33/66MHz
- Supports pair swap/polarity/skew correction
- Crossover Detection & Auto-Correction
- Wake-on-LAN and remote wake-up support
- Microsoft® NDIS5 Checksum Offload (IP, TCP, UDP) and largesend offload support
- Supports Full Duplex flow control (IEEE 802.3x)

- Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
- Supports IEEE 802.1P Layer 2 Priority Encoding
- Supports IEEE 802.1Q VLAN tagging
- Serial EEPROM
- 3.3V signaling, 5V PCI I/O tolerant
- Transmit/Receive FIFO (8K/64K) support
- Supports power down/link down power saving
- Supports PCI Message Signaled Interrupt (MSI)

2.9 Drive Interfaces

The PCISA-8450G can support the following drive interfaces.

- 2 x SATA drives
- 2 x IDE devices
- 1 x FDD

2.9.1 SATA Drives

The PCISA-8450G CPU card supports two first generation SATA drives with transfer rates up to 1.5 Gb/s.

2.9.2 IDE HDD Interfaces

The PCISA-8450G southbridge chipset IDE controller supports up to two HDDs with the following specifications:

- Supports PIO IDE transfers up to 16 MB/s
- Supports 8237 style DMA protocol with transfer rates of up to 16 MB/s
- Supports the following Ultra ATA device:
  - Supports an Ultra ATA/100/66/33 DMA protocol with data transfer rates up to 100 MB/s

2.9.3 Floppy Disk Drive (FDD)

The PCISA-8450G CPU card supports a single FDD. The following FDD formats are compatible with the card.

- 5.25”: 360KB and 1.2MB
- 3.5”: 720KB, 1.44MB and 2.88MB

2.10 Serial Ports

The PCISA-8450G CPU card has two high-speed UART serial ports, configured as COM1 and COM2. The serial ports have the following specifications.

- 16C550 UART with 16-byte FIFO buffer
- 115.2Kbps transmission rate

2.11 Real Time Clock

256-byte battery backed CMOS RAM

2.12 System Monitoring

The PCISA-8450G CPU card is capable of self-monitoring various aspects of its operating status including:

- CPU, chipset, and battery voltage, +3.3V, +5V, and +12V
- RPM of cooling fans
- CPU and card temperatures (by the corresponding embedded sensors)

2.13 Infrared Data Association (IrDA) Interface

The PCISA-8450G CPU card IrDA supports the following interfaces.

- Serial Infrared (SIR)
- Shift Keyed Infrared (ASKIR)

To use the IrDA port, configure SIR or ASKIR mode in the BIOS under Super IO devices. The normal RS-232 COM 2 will then be disabled.

2.14 USB Interfaces

The PCISA-8450G CPU card has two internal USB interfaces. The USB interfaces support USB 2.0.

2.15 BIOS

The PCISA-8450G CPU card uses a licensed copy of AMI BIOS. Flash BIOS features used are listed below:

- SMIBIOS (DMI) compliant
- Console redirection function support
- PXE (**P**re-Boot E**x**ecution **E**nvironment) support
- USB booting support

2.16 Operating Temperature and Temperature Control

The maximum and minimum operating temperatures for the PCISA-8450G CPU card are listed below.

- Minimum Operating Temperature: 0ºC (32°F)
- Maximum Operating Temperature: 60°C (140°F)

A cooling fan and heat sink must be installed on the CPU. Thermal paste must be smeared on the lower side of the heat sink before it is mounted on the CPU. Heat sinks are also mounted on the northbridge and southbridge chipsets to ensure the operating temperature of these chips remain low.

2.17 Audio Codec

The PCISA-8450G has an integrated REALTEK ALC655 CODEC. The ALC655 CODEC is a 16-bit, full-duplex AC'97 Rev. 2.3 compatible six-channel audio CODEC designed for PC multimedia systems, including host/soft audio and AMR/CNR-based designs. Some of the features of the codec are listed below.

- Meets performance requirements for audio on PC99/2001 systems
- Meets Microsoft WHQL/WLP 2.0 audio requirements
- 16-bit Stereo full-duplex CODEC with 48KHz sampling rate

- Compliant with AC'97 Rev 2.3 specifications
- Front-Out, Surround-Out, MIC-In and LINE-In Jack Sensing
- 14.318MHz -> 24.576MHz PLL to eliminate crystal
- 12.288MHz BITCLK input
- Integrated PCBEEP generator to save buzzer
- Interrupt capability
- Three analog line-level stereo inputs with 5-bit volume control, LINE_IN, CD, AUX
- High-quality differential CD input
- Two analog line-level mono inputs: PCBEEP, PHONE-IN
- Two software selectable MIC inputs
- Dedicated Front-MIC input for front panel applications (software selectable)
- Boost preamplifier for MIC input
- LINE input shared with surround output; MIC input shared with Center and LFE output
- Built-in 50mW/20ohm amplifier for both Front-out and Surround-Out
- External Amplifier Power Down (EAPD) capability
- Power management and enhanced power saving features
- Supports Power-Off CD function
- Adjustable VREFOUT control
- Supports 48KHz S/PDIF output, complying with AC'97 Rev 2.3 specifications
- Supports 32K/44.1K/48KHz S/PDIF input
- Power support: Digital: 3.3V; Analog: 3.3V/5V
- Standard 48-pin LQFP package
- EAX™ 1.0 & 2.0 compatible
- Direct Sound 3D™ compatible
- A3D™ compatible
- I3DL2 compatible
- HRTF 3D positional audio
- 10-band software equalizer
- Voice cancellation and key shifting in Karaoke mode
- AVRack® Media Player
- Configuration Panel for improved user convenience

2.18 Power Consumption

Table 2-3 shows the power consumption parameters for the PCISA-8450G CPU card when a Intel® Pentium® 4/Intel® Celeron® D processor with a clock speed of 2.53GHz, an L2 cache of 256MB and a FSB 533MHz is running with a 1GB DDR266 module.

Voltage	Current
+5V	2.9
+12V	5.4

Table 2-3: Power Consumption

2.19 Packaged Contents and Optional Accessory Items

2.19.1 Package Contents

The PCISA-8450G CPU card, comes with the following components:

- 1 x PCISA-8450 single board computer
- 1 x ATA66/100 HDD cable
- 2 x SATA cable
- 1 x SATA power cable
- 1 x RS-232 cable
- 1 x Keyboard/ PS2 mouse cable
- 1 x Power cable for P4
- 1 x mini jumper pack
- 1 x Utility CD
- 1 x QIG (quick installation guide)

2.19.2 Optional Accessory Items

The items shown in the list below are optional accessory items purchased separately.

- Socket 478 type CPU Cooler
- FDD cable
- LPT cable
- USB cable

Chapter

3

Connectors and Jumpers

3.1 Peripheral Interface Connectors

The locations of the peripheral interface connectors are shown in **Section 3.1.1**. A complete list of all the peripheral interface connectors can be seen in **Section 3.1.2**.

3.1.1 PCISA-8450G CPU Card Layout

Figure 3-1 shows the onboard peripheral connectors, backplane peripheral connectors and onboard jumpers on the front side of the card.

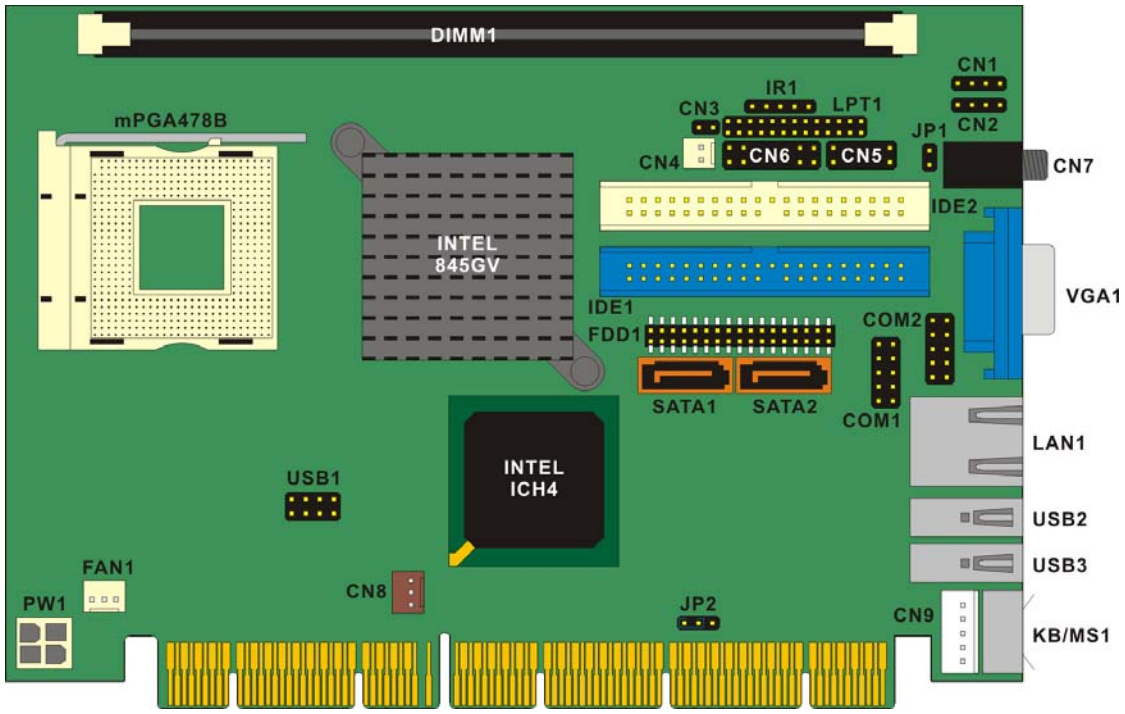

Figure 3-1: Connector and Jumper Locations (Front Side)

Figure 3-2 shows the onboard peripheral connectors on the solder side of the card.

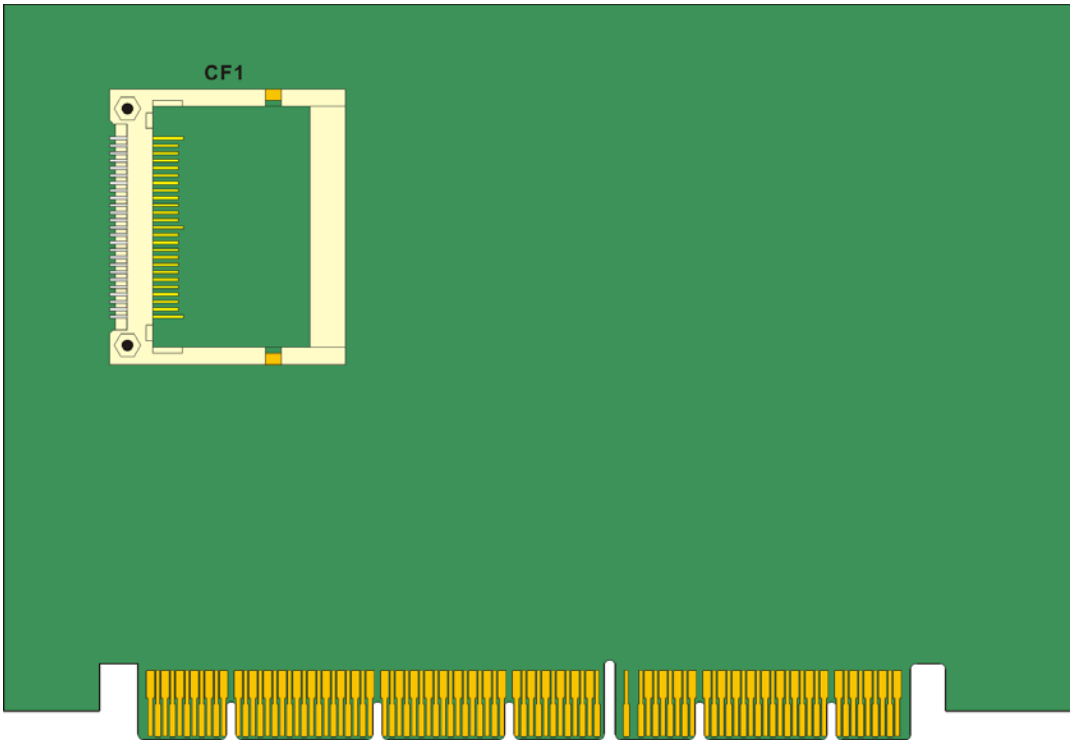

Figure 3-2: Connector and Jumper Locations (Solder Side)

3.1.2 Peripheral Interface Connectors

Table 3-1 shows a list of the peripheral interface connectors on the PCISA-8450G CPU card. Detailed descriptions of these connectors can be found in **Section 3.2**.

Connector	Type	Label
8 Bit GPIO connector	10-pin header	CN5
ATX 12V connector	4-pin header	PW1
Backplane to Mainboard ATX Connector	3-pin header	CN8
Compact Flash Type II connector	50-pin header	CF1
CPU cooling fan connector	3-pin header	FAN1
FDD connector	34-pin header	FDD1
Front Panel connector	14-pin header	CN6
IDE Interface connector (Primary)	40-pin header	IDE1
IDE Interface connector (Secondary)	40-pin header	IDE2
IrDA connector	6-pin header	IR1
Keyboard connector	5-pin header	CN9

Connector	Type	Label
Line In connector	4-pin header	CN1
Mic In connector	4-pin header	CN2
Parallel port connector	26-pin header	LPT1
Power Button Switch	2-pin header	CN4
SATA drive port (1.5Gb/s)	SATA disk drive port	SATA1
SATA drive port (1.5Gb/s)	SATA disk drive port	SATA2
Serial communications connector	10-pin header	COM1
Serial communications connector	10-pin header	COM2
SMI Switch	2-pin header	CN3
USB connector for 2 USB devices	8-pin header	USB1

Table 3-1: Peripheral Interface Connectors

3.1.3 Rear Panel Connectors

Table 3-2 lists the rear panel connectors on the PCISA-8450G CPU card. Detailed descriptions of these connectors can be found in **Section 4.6**.

Connector	Type	Label
Keyboard/Mouse connector	PS/2	KB/MS1
USB connector	USB Port	USB2
USB connector	USB Port	USB3
Ethernet connector	RJ-45	LAN1
VGA Connector	15-pin VGA connector	VGA1
Audio Line Out connector	LINE OUT	CN7

Table 3-2: Peripheral Interface Connectors

3.1.4 Onboard Jumpers

Table 3-3 lists the onboard jumpers. Detailed descriptions of these jumpers can be found in **Section 3.4**.

Connector	Type	Label
CF Card Setup	2-pin header	JP1
Clear CMOS Setup	3-pin header	JP2

Table 3-3: Onboard Jumpers

3.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the CPU card and are only accessible when the CPU card is outside of the chassis. This section has complete descriptions of all the internal, peripheral connectors on the PCISA-8450G CPU card.

3.2.1 8 Bit GPIO Connector

CN Label: **CN5**

CN Type: **10-pin header (2x5 pins)**

CN Location: **See Figure 3-3**

CN Pinouts: **See Table 3-4**

The General Purpose Input/Output (GPIO) connector is a user-programmable general-purpose I/O controller. The GPIO connector is managed through an ITE IT8712F-A/IXS SI/O chip.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC5
3	GPO3	4	GPO2
5	GPO1	6	GPO0
7	GPI3	8	GPI2
9	GPI1	10	GPI0

Table 3-4: CN5 Connector Pinouts

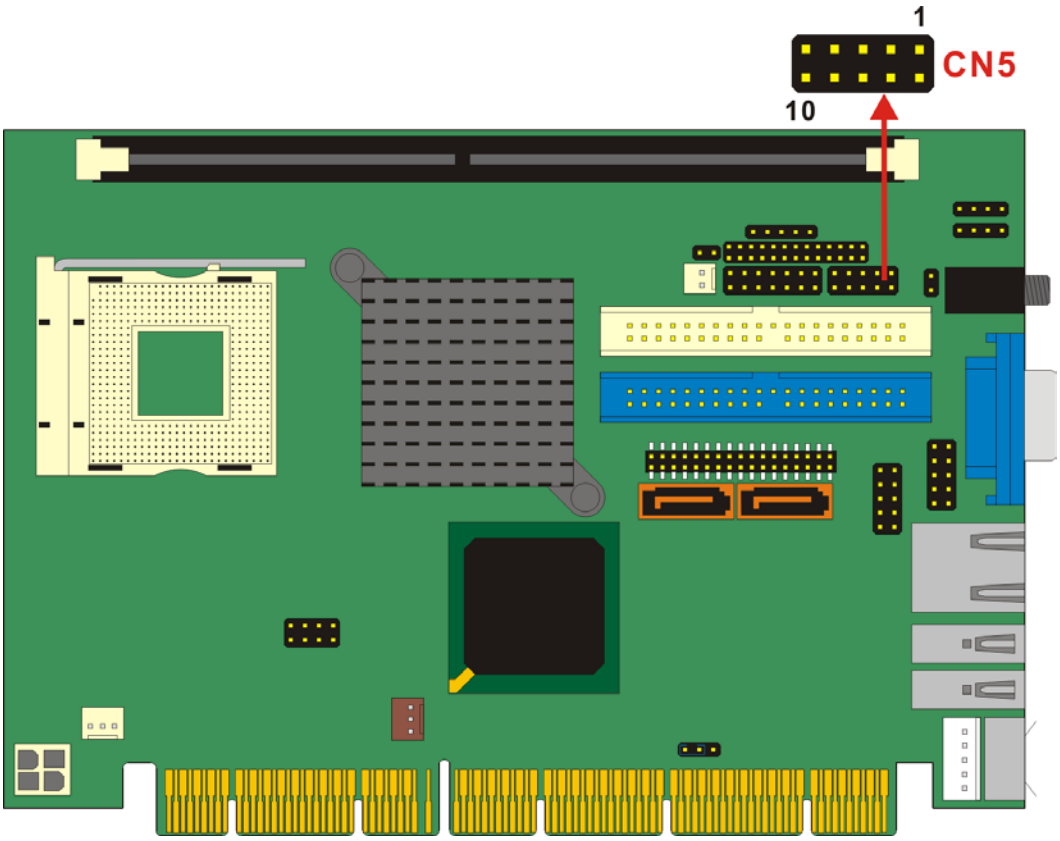

Figure 3-3: CN5 Connector Location

3.2.2 ATX-12V Power Source Connector

CN Label: **PW1**

CN Type: **4-pin header (2x2 pins)**

CN Location: **See Figure 3-4**

CN Pinouts: **See Table 3-5**

This connector supports the ATX-12V power supply.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	+12V	4	+12V

Table 3-5: PW1 Connector Pinouts

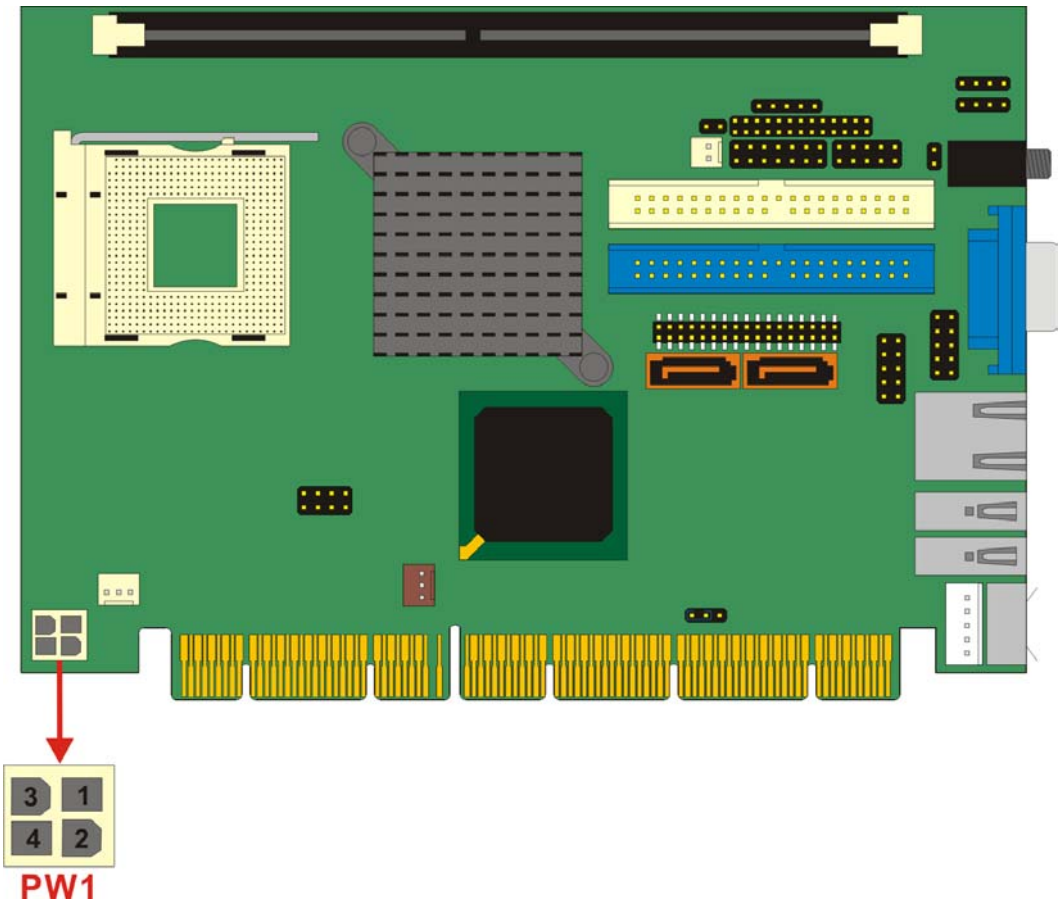

Figure 3-4: PW1 Connector Location

3.2.3 Backplane to Mainboard ATX Connector

CN Label:	**CN8**
CN Type:	**3-pin header**
CN Location:	**See Figure 3-5**
CN Pinouts:	**See Table 3-6**

The backplane to mainboard ATX connector connects a power source from a backplane with an ATX Connector.

PIN NO.	DESCRIPTION
1	5VSB
2	ATX-ON
3	GND

Table 3-6: CN8 Connector Pinouts

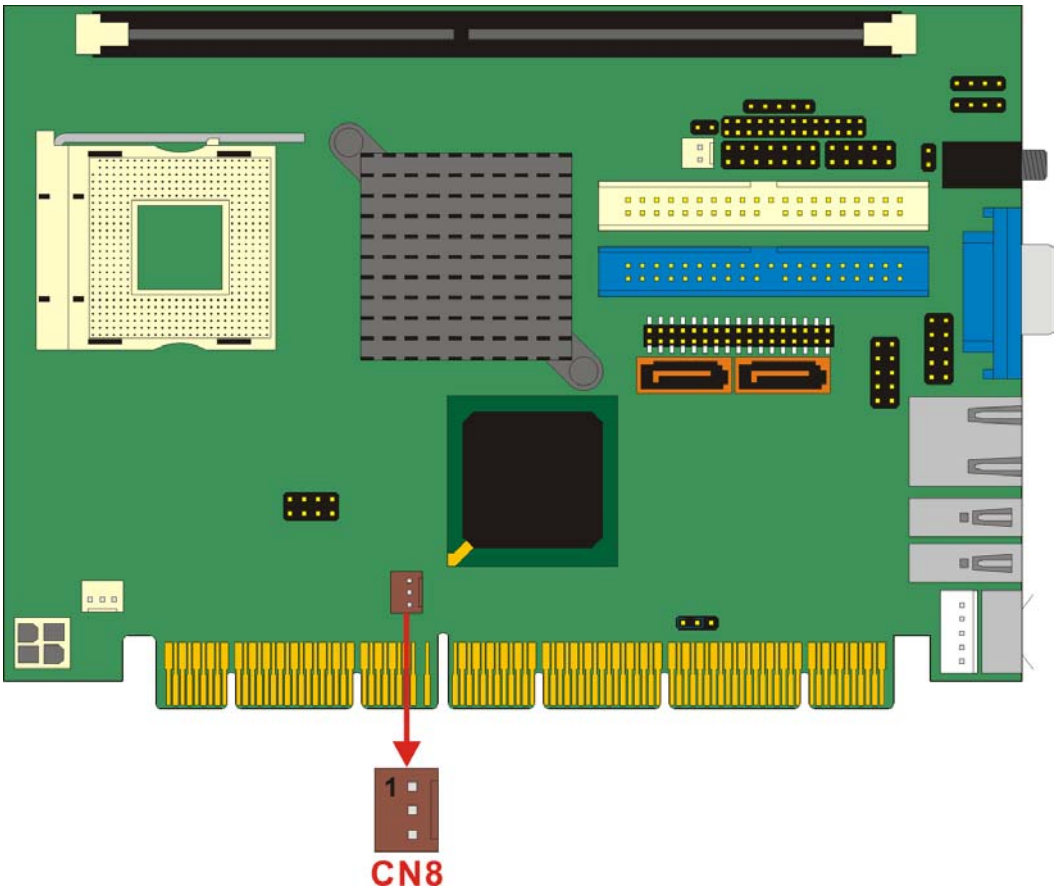

Figure 3-5: CN8 Connector Location

3.2.4 Compact Flash Connector

CN Label: **CF1**

CN Type: **50-pin header (2x25 pins)**

CN Location: **See Figure 3-6**

CN Pinouts: **See Table 3-7**

This 50-pin header IS used to adapt Type II Compact Flash and CF+ cards for use in Type II (5 mm thick) PCMCIA card slots.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	26	-CD1
2	D03	27	D11
3	D04	28	D12
4	D05	29	D13
5	D06	30	D14
6	D07	31	D15
7	-CE1	32	-CE2
8	A10	33	-VS1
9	-OE	34	-IORD
10	A09	35	-IOWR
11	A08	36	-WE
12	A07	37	READY
13	VCC	38	VCC
14	A06	39	A25
15	A05	40	-VS2
16	A04	41	RESET
17	A03	42	-WAIT
18	A02	43	-INPACK
19	A01	44	-REG
20	A00	45	BVD2
21	D00	46	BVD1
22	D01	47	D08
23	D02	48	D09
24	WP	49	D10
25	-2CD	50	GND

Table 3-7: CF1 Connector Pinouts

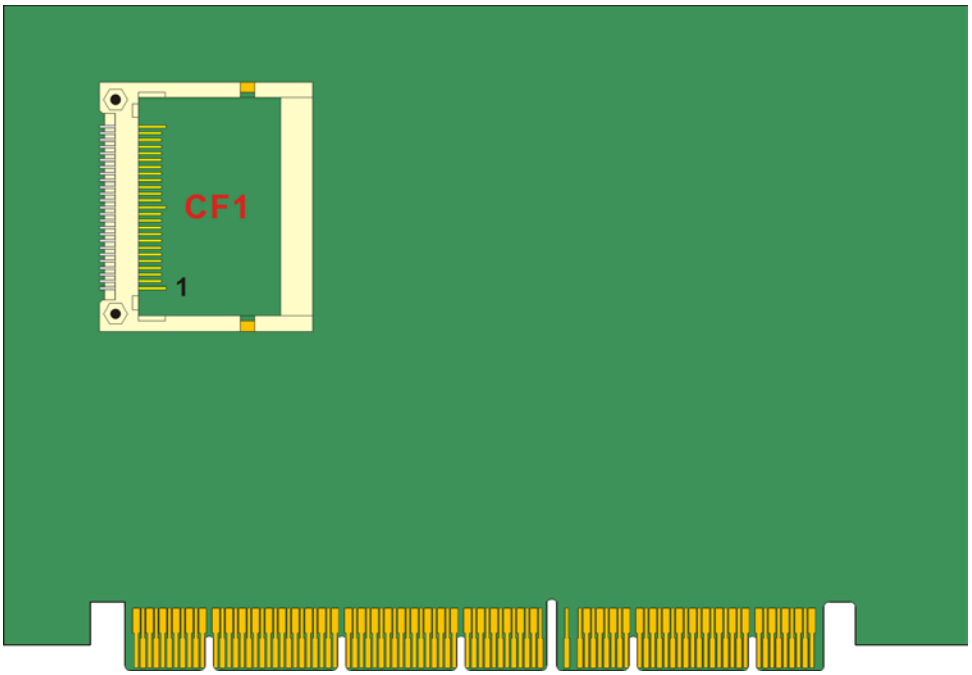

Figure 3-6: CF1 Connector Location

3.2.5 CPU Cooling Fan Connector

CN Label: **FAN1**

CN Type: **3-pin header**

CN Location: **See Figure 3-7**

CN Pinouts: **See Table 3-8**

The FAN1 cooling fan connector provides a 12V, 350mA ~ 740mA or 1A ~ 2.2A current to the cooling fan. The connector has a "rotation" pin to get rotation signals from the fan and notify the system so the system BIOS can recognize the fan speed. Please note that only certain fans can issue the rotation signals.

PIN	DESCRIPTION
1	Sense Pulse
2	+12V
3	GND

Table 3-8 FAN1 Connector Pinouts

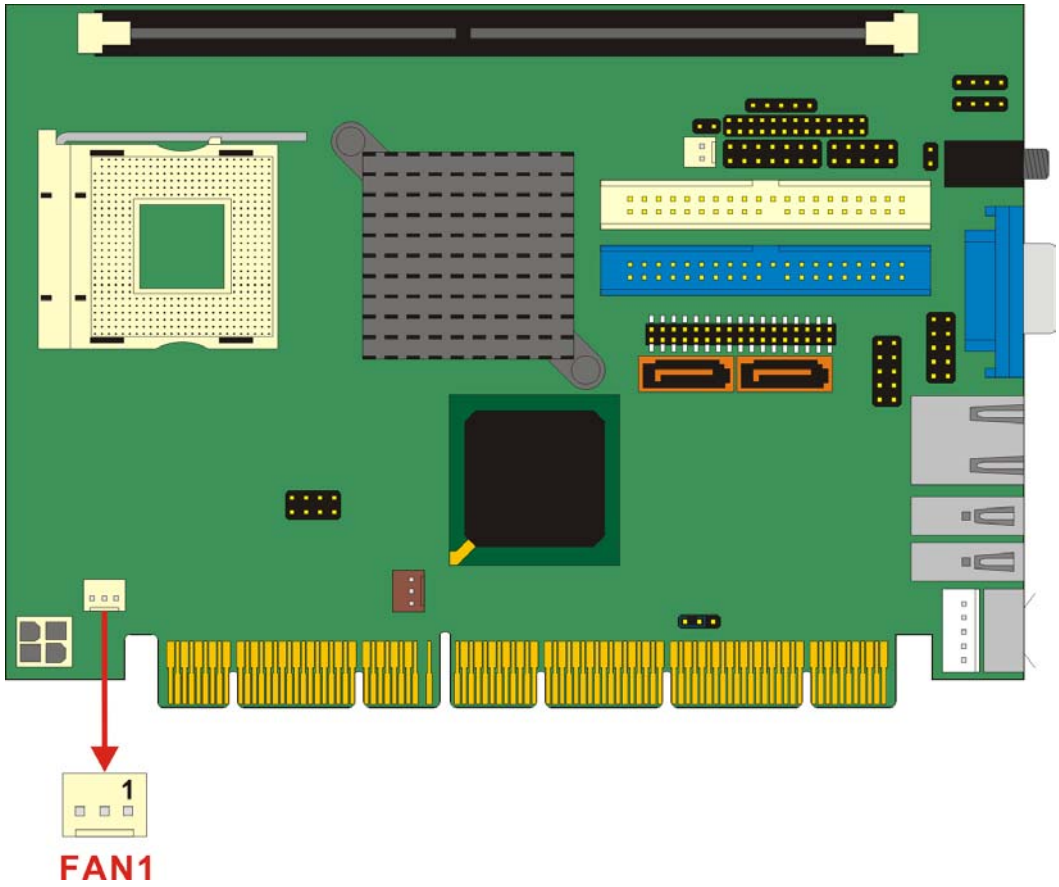

Figure 3-7 FAN1 Connector Location

3.2.6 FDD Connector

CN Label:	**FDD1**
CN Type:	**34-pin header (2x17 pins)**
CN Location:	**See Figure 3-8**
CN Pinouts:	**See Table 3-9**

The PCISA-8450G is shipped with a 34-pin daisy-chain drive connector cable. This cable can be connected to the FDD connector.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	2	REDUCE WRITE
3	GND	4	N/C
5	N/C	6	N/C
7	GND	8	INDEX#
9	GND	10	MOTOR ENABLE A#
11	GND	12	DRIVE SELECT B#
13	GND	14	DRIVE SELECT A#
15	GND	16	MOTOR ENABLE B#
17	GND	18	DIRECTION#
19	GND	20	STEP#
21	GND	22	WRITE DATA#
23	GND	24	WRITE GATE#
25	GND	26	TRACK 0#
27	GND	28	WRITE PROTECT#
29	GND	30	READ DATA#
31	GND	32	HEAD#
33	GND	34	DISK CHANGE#

Table 3-9: FDD Connector Pinouts

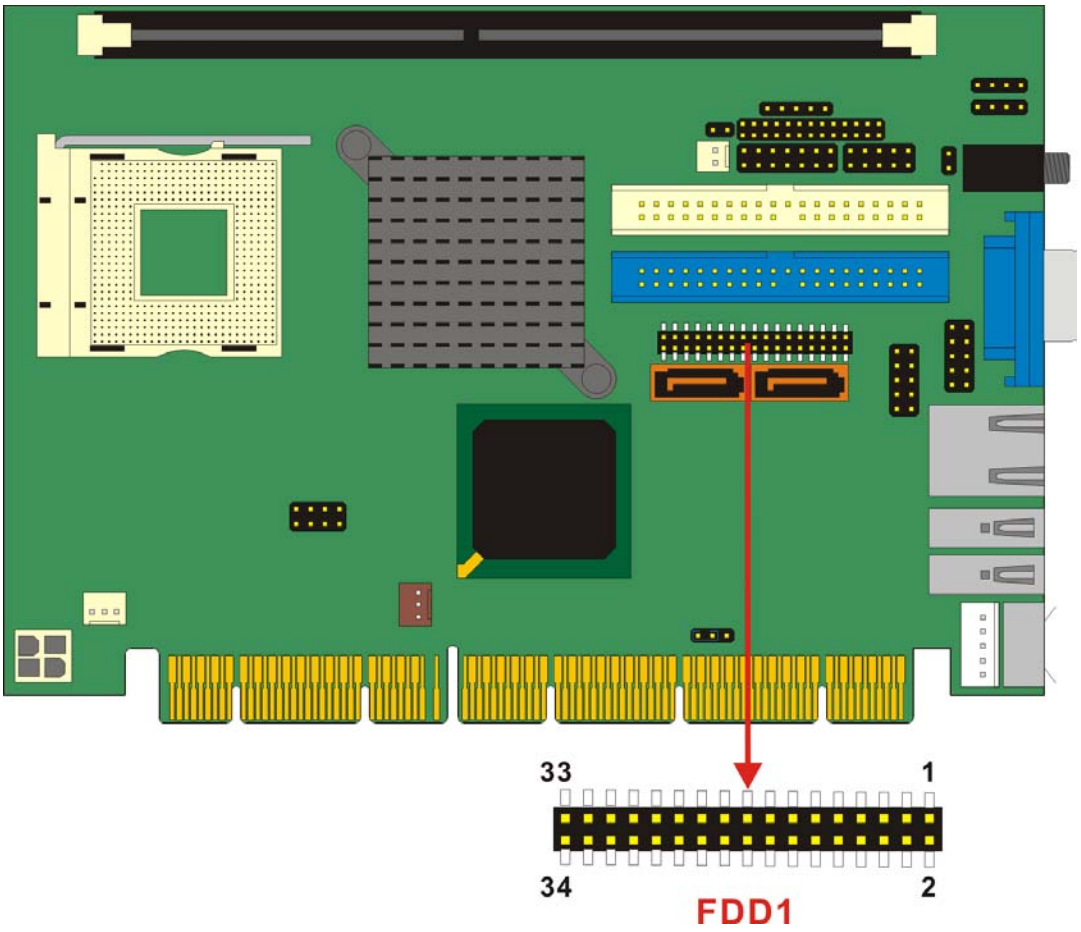

Figure 3-8: FDD Connector Location

3.2.7 Front Panel Connector

CN Label: **CN6**

CN Type: **14-pin header (2x7 pins)**

CN Location: **See Figure 3-9**

CN Pinouts: **See Table 3-10**

The system panel connector connects to:

- the system chassis front panel LEDs
- the chassis speaker

- the power switch
- the reset button.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	X	2	+5V
3	N/C	4	N/C
5	GROUND	6	N/C
7	KEYLOCK#	8	SPEAKER
9	GROUND	10	RESET-
11	GROUND	12	GROUND
13	HDLED+	14	HDLED-

Table 3-10: CN6 Connector Pinouts

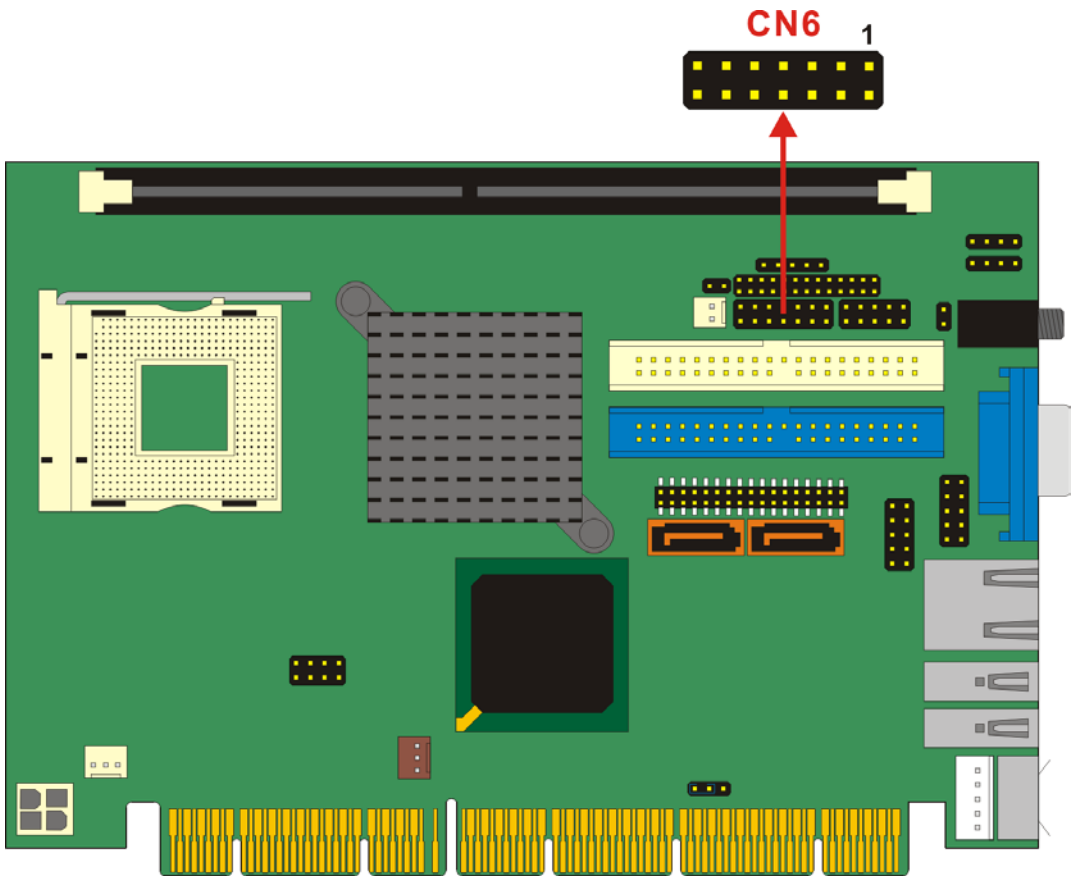

Figure 3-9: CN6 Connector Location

3.2.8 IDE Interface Connectors

CN Label: **IDE1 (primary) and IDE2 (secondary)**

CN Type: **40-pin header (2x20 pins)**

CN Location: **See Figure 3-10**

CN Pinouts: **See Table 3-11**

Two IDE connectors provide connectivity for four IDE devices.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET#	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GND	20	(KEY)
21	IDE DRQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IDE CHRDY	28	GND
29	IDE DACK	30	GND
31	INTERRUPT	32	N/C
33	SA1	34	P66DET
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GND

Table 3-11: IDE Interface Connector Pinouts

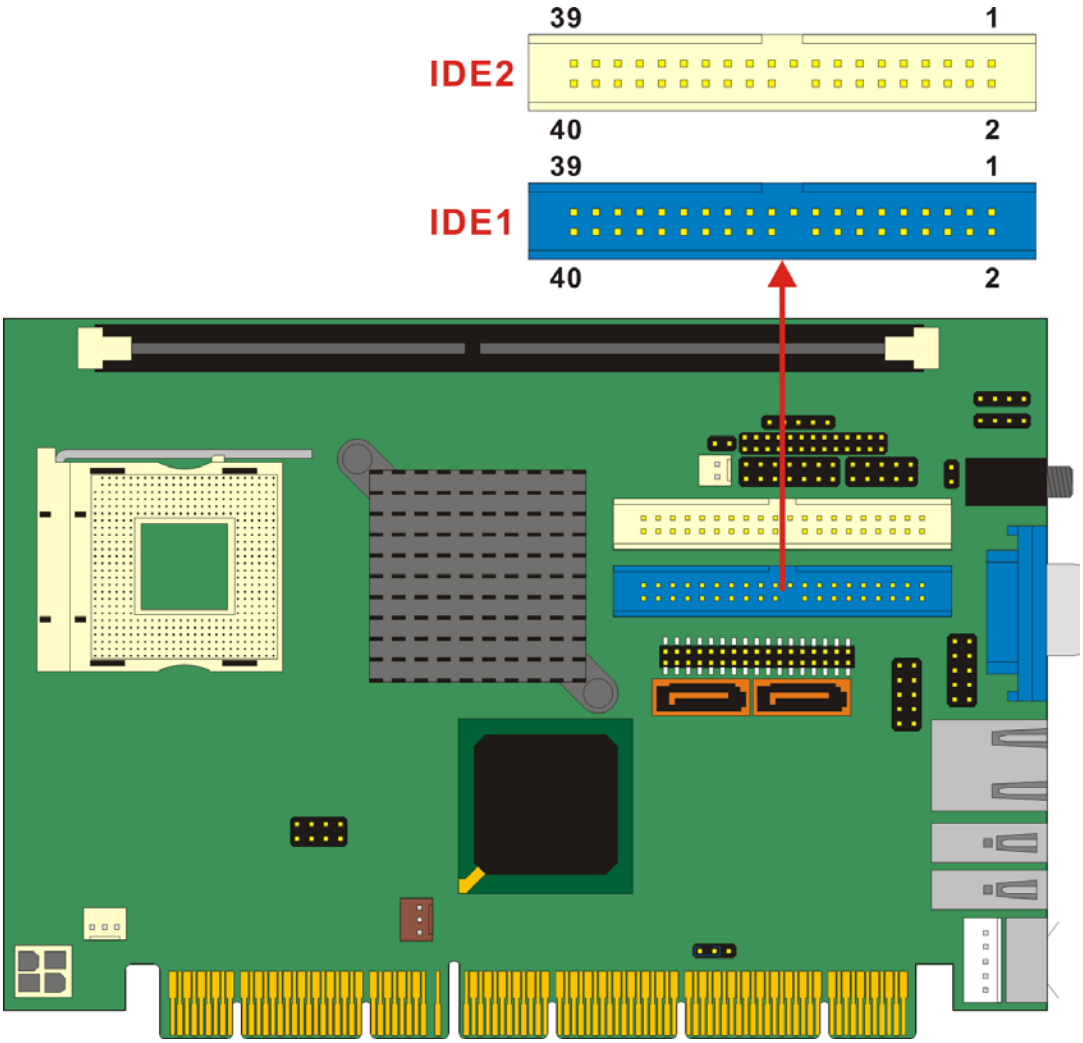

Figure 3-10: IDE Interface Connector Locations

3.2.9 IrDA Connector

CN Label:	**IR1**
CN Type:	**6-pin header**
CN Location:	**See Figure 3-11**
CN Pinouts:	**See Table 3-12**

The integrated IrDA connector supports both the SIR and ASKIR infrared protocols.

PIN	DESCRIPTION
1	VCC
2	NC
3	IR-RX
4	GND
5	IR-TX
6	CIRRX

Table 3-12: IrDA Connector Pinouts

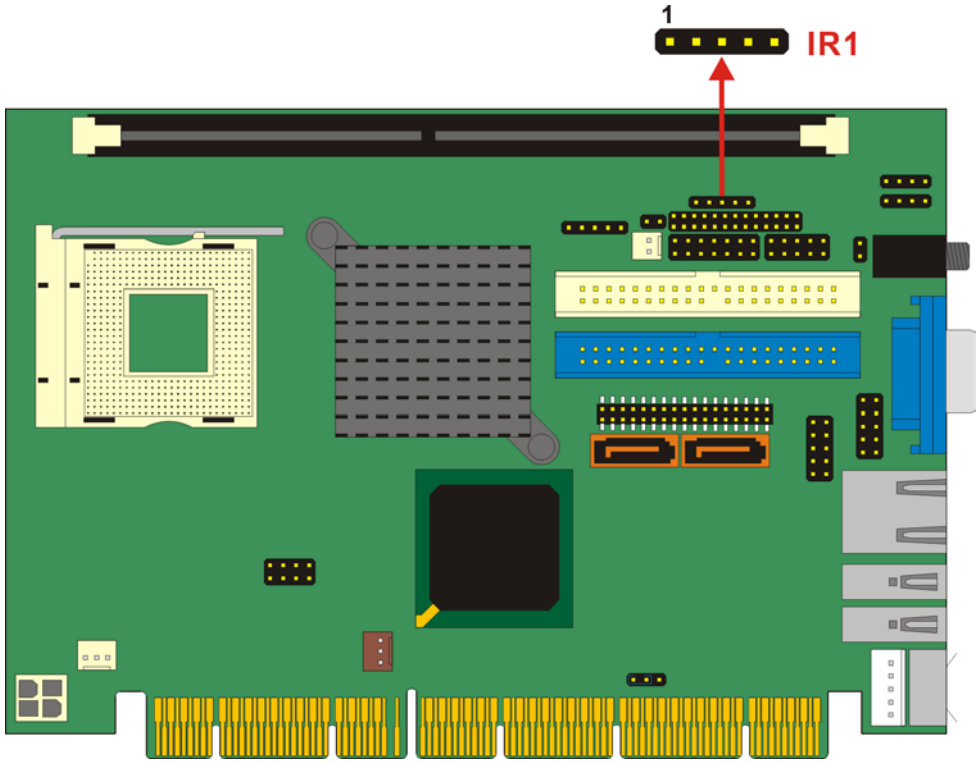

Figure 3-11: IrDA Connector Location

3.2.10 Keyboard Connector

CN Label: **CN9**

CN Type: **5-pin header**

CN Location: **See Figure 3-12**

CN Pinouts: **See Table 3-13**

For alternative applications, an on board keyboard pin header connector is also available.

PIN NO.	DESCRIPTION
1	KEYBOARD CLOCK
2	KEYBOARD DATA
3	N/C
4	GND
5	+5V

Table 3-13: CN9 Connector Pinouts

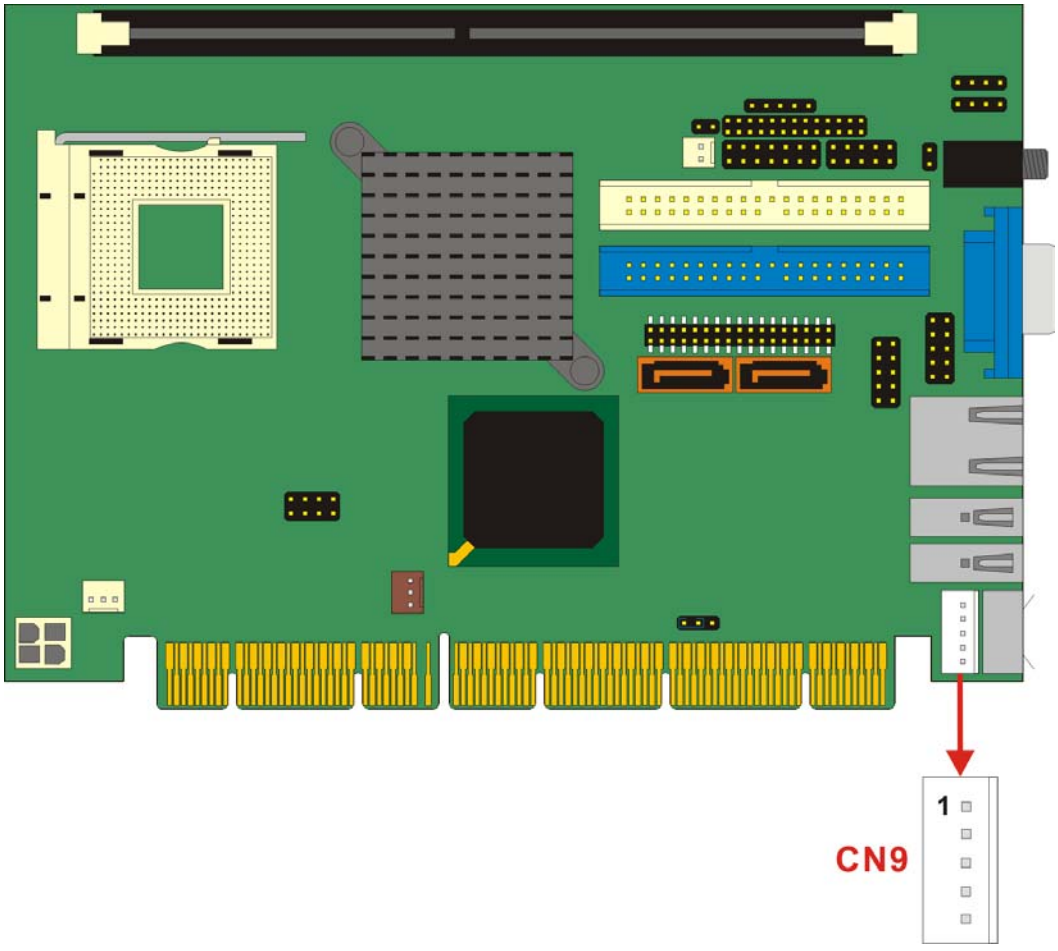

Figure 3-12: CN9 Connector Location

3.2.11 Line In Connector

CN Label: **CN1**

CN Type: **4-pin header**

CN Location: **See Figure 3-13**

CN Pinouts: **See Table 3-14**

The line in connector is used for connecting left and right channel signals of an internal audio device to the audio subsystem.

PIN NO.	DESCRIPTION
1	Left
2	GND
3	GND
4	Right

Table 3-14: CN1 Connector Pin Outs

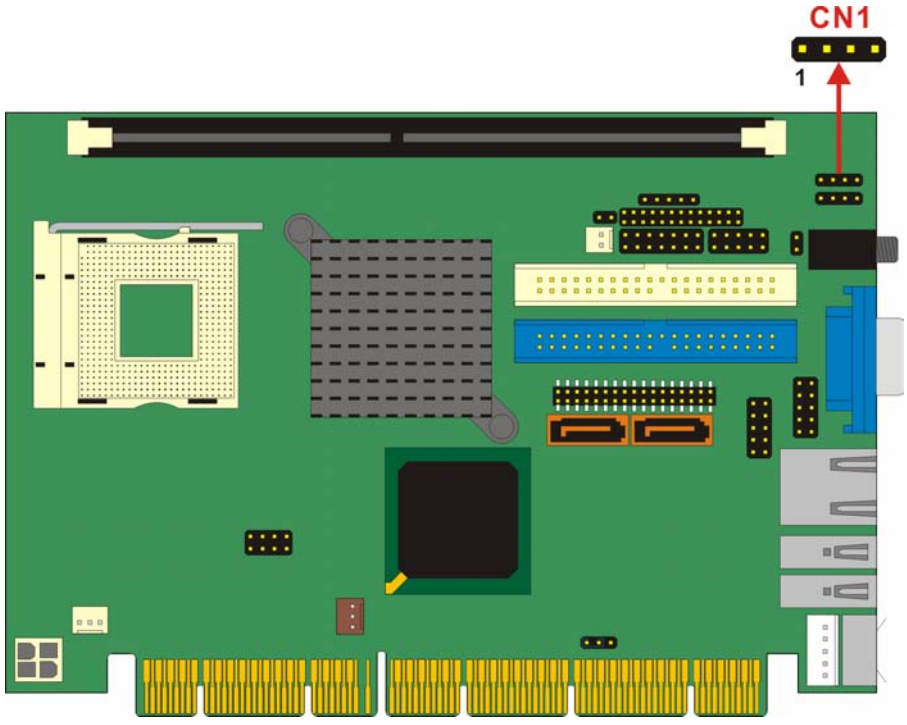

Figure 3-13: CN1 Connector Location

3.2.12 Mic In Connector

CN Label: **CN2**

CN Type: **4-pin header**

CN Location: **See Figure 3-14**

CN Pinouts: **See Table 3-15**

This 4-pin header connects to a microphone.

PIN NO.	DESCRIPTION
1	MIC-IN
2	GND
3	GND
4	NC

Table 3-15: CN2 Connector Pin Outs

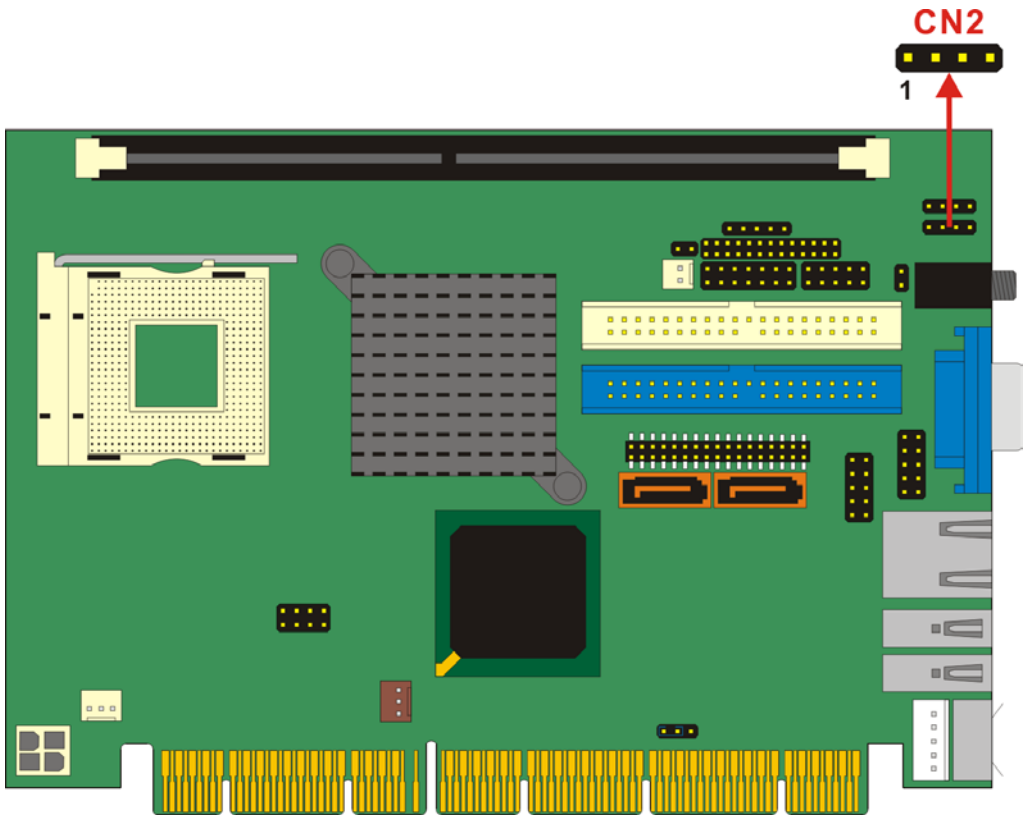

Figure 3-14: CN2 Connector Location

3.2.13 Parallel Port Connector

CN Label: **LPT1**

CN Type: **26-pin header (2x13 pins)**

CN Location: **See Figure 3-15**

CN Pinouts: **See Table 3-16**

The parallel port connects to a printer or other parallel device with a 26-pin flat-cable connector.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	STROBE#	14	AUTO FORM FEED #
2	DATA0	15	ERROR#
3	DATA1	16	INITIALIZE#
4	DATA2	17	PRINTER SELECT LN#
5	DATA3	18	GND
6	DATA4	19	GND
7	DATA5	20	GND
8	DATA6	21	GND
9	DATA7	22	GND
10	ACKNOWLEDGE#	23	GND
11	BUSY	24	GND
12	PAPER EMPTY	25	GND
13	PRINTER SELECT		

Table 3-16: LPT1 Connector Pinouts

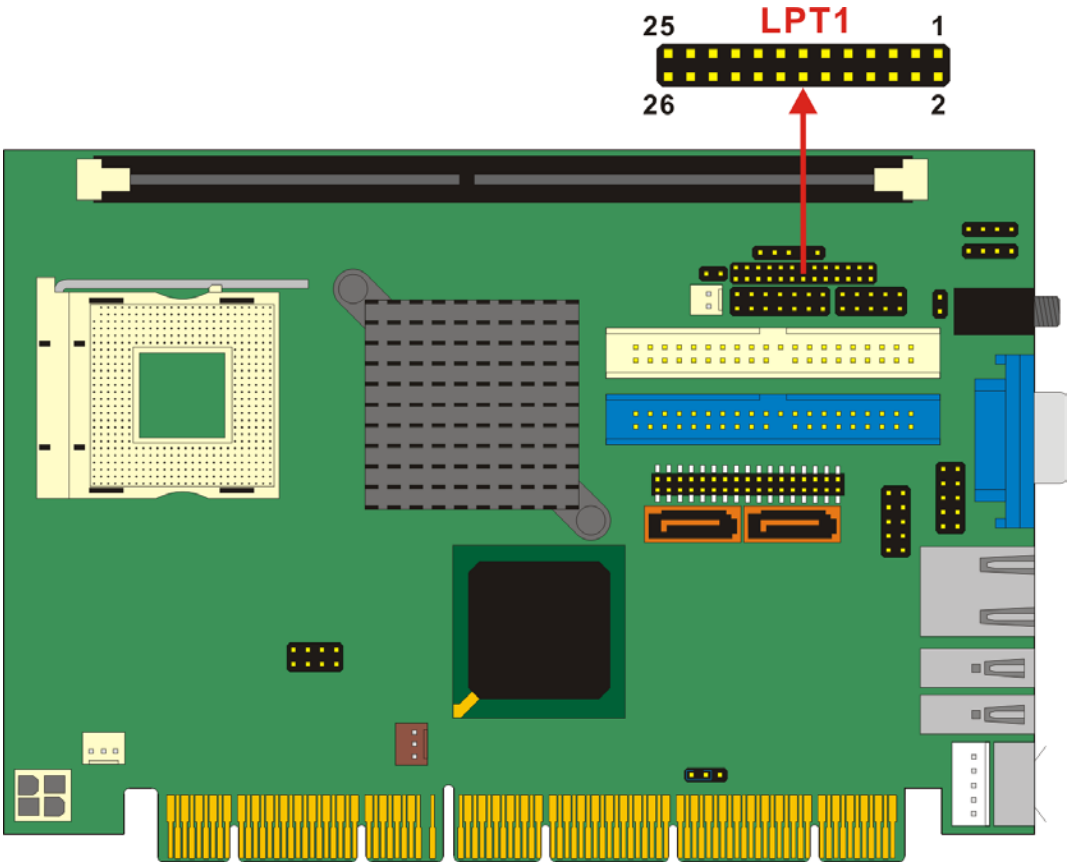

Figure 3-15: LPT1 Connector Location

3.2.14 Power Switch Button

CN Label: **CN4**

CN Type: **2-pin header**

CN Location: **See Figure 3-17**

CN Pinouts: **See Table 3-18**

Attach the PWR_BTN Switch of the panel to the CN4 connector. Use the switch to power On/Off the system.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	PWR-BTN	2	GND

Table 3-17: CN4 Connector Pinouts

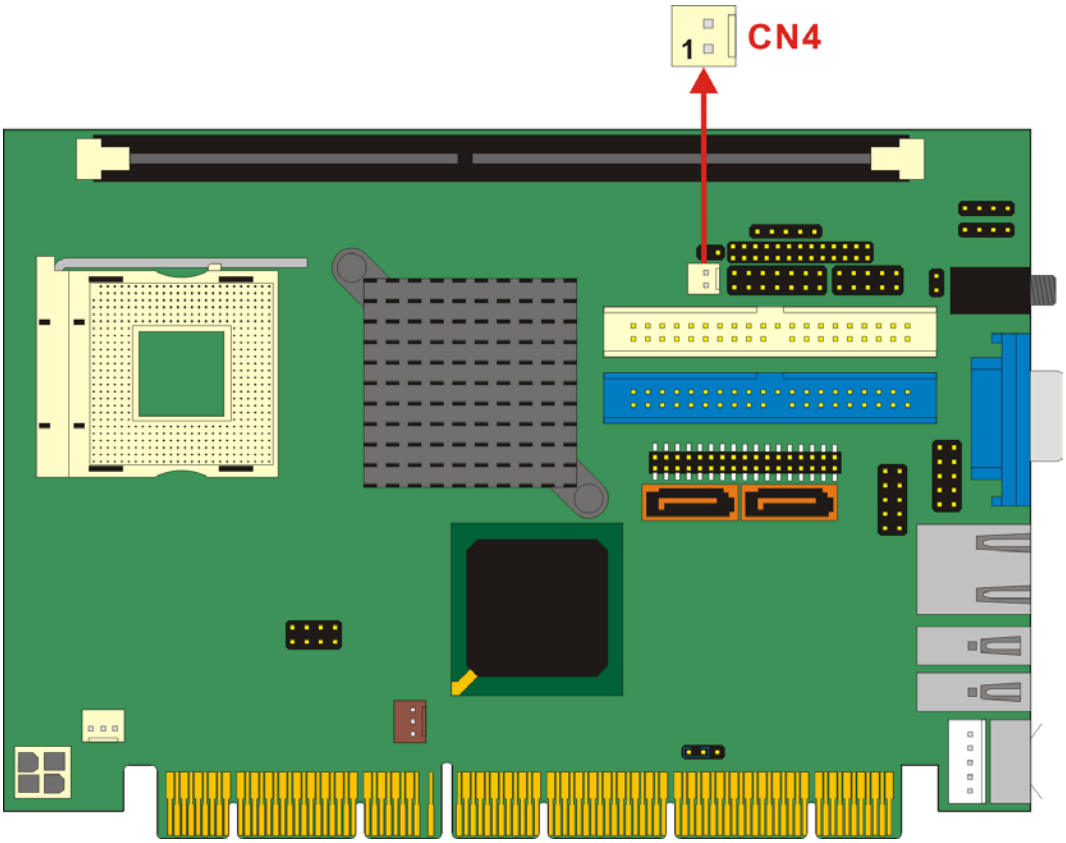

Figure 3-16: CN4 Connector Locations

3.2.15 SATA Drive Ports

CN Label:	**SATA1, SATA2**
CN Type:	**7-pin port**
CN Location:	**See Figure 3-17**
CN Pinouts:	**See Table 3-18**

The SATA drive ports provide connectivity to SATA drives with a maximum data transfer rate of 1.5Gb/s.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	5	RX-
2	TX+	6	RX+
3	TX-	7	GND
4	GND		

Table 3-18: SATA Connector Pinouts

CAUTION!

SATA hard drives may come with both a 4P power connector and a SATA power interface. Attach either the 4P connector or the SATA power cable to the SATA hard drives. ***DO NOT*** attach both the power connectors to the SATA hard drives at the same time! Doing so will cause damage.

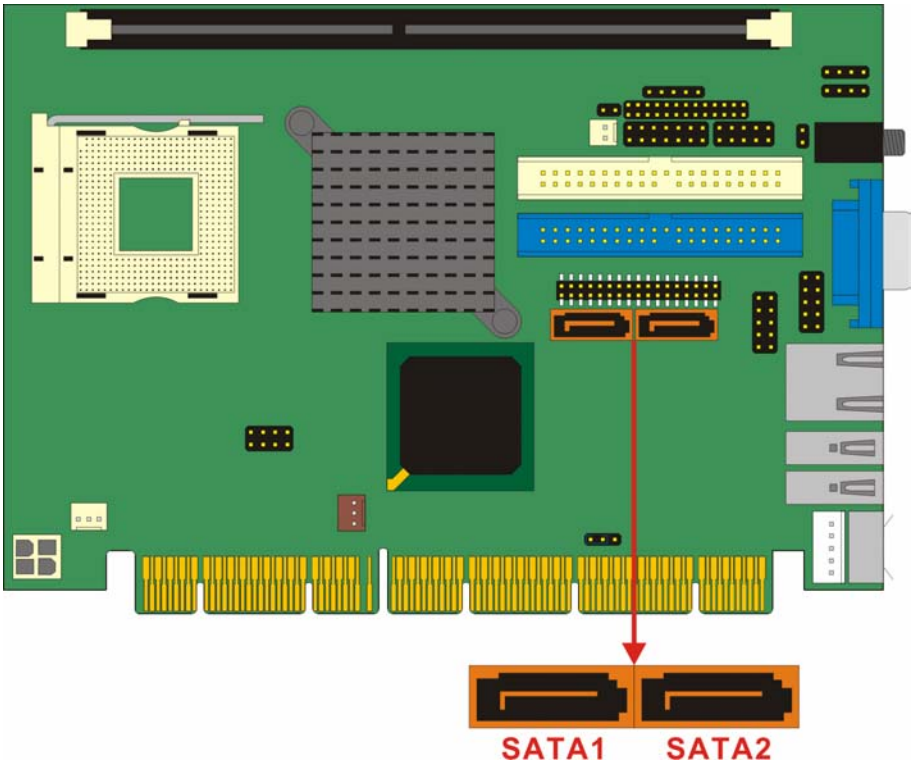

Figure 3-17: SATA Connector Locations

NOTE:

1. SATA is supported by:
   - Windows 2000 SP4
   - Windows XP SP1
   - Windows 2003, or later versions.
2. Older OSes, such as Windows 98SE or ME, do not support the SATA interface.

3.2.16 Serial Communications Connector

CN Label: **COM1, COM2**

CN Type: **10-pin headers (2x5 pins)**

CN Location: **See Figure 3-18**

CN Pinouts: **See Table 3-19**

The PCISA-8450G offers two ten-pin headers for serial connections.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	DATA CARRIER DETECT (DCD)	6	DATA SET READY (DSR)
2	RECEIVE DATA (RXD)	7	REQUEST TO SEND (RTS)
3	TRANSMIT DATA (TXD)	8	CLEAR TO SEND (CTS)
4	DATA TERMINAL READY (DTR)	9	RING INDICATOR (RI)
5	GND (GND)	10	NC

Table 3-19: COM1, COM2 Connector Pinouts

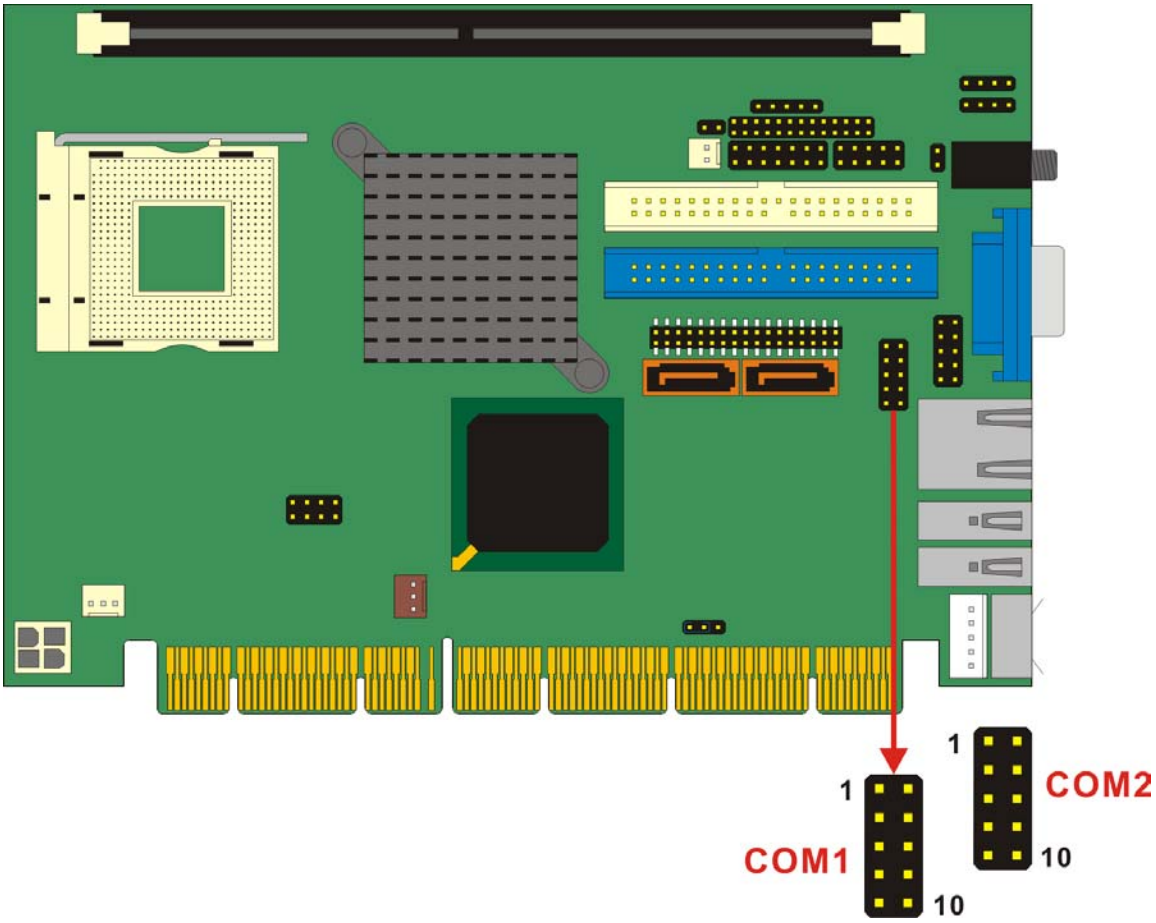

Figure 3-18 COM1, COM2 Connector Location

3.2.17 SMI Switch Connector

CN Label:	**CN3**
CN Type:	**2-pin header**
CN Location:	**See Figure 3-19**
CN Pinouts:	**See Table 3-20**

The **SMI Switch** connector connects to the sleep button on the chassis to put the computer into suspend mode.

PIN NO.	DESCRIPTION
1	EXT_SMI
2	GND

Table 3-20: CN3Connector Pinouts

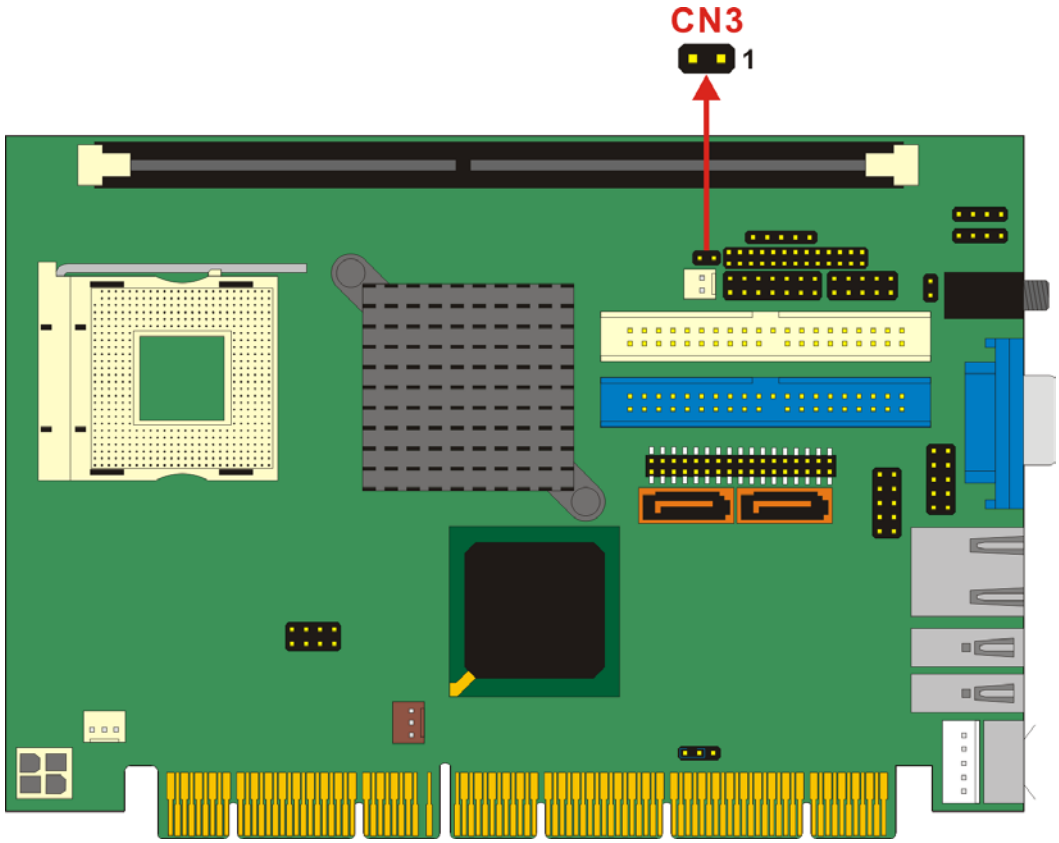

Figure 3-19: CN3 Connector Location

3.2.18 Internal USB Connectors

CN Label: **USB1**

CN Type: **8-pin header (2x4 pins)**

CN Location: **See Figure 3-20**

CN Pinouts: **See Table 3-21**

One 2x4 pin connector provides connectivity to two USB 2.0 ports. The USB ports are used for I/O bus expansion.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	USB Power	2	GND
3	USBPX-	4	USBPX+
5	USBPX+	6	USBPX-
7	GND	8	USB Power

Table 3-21: USB1 Connector Pinouts

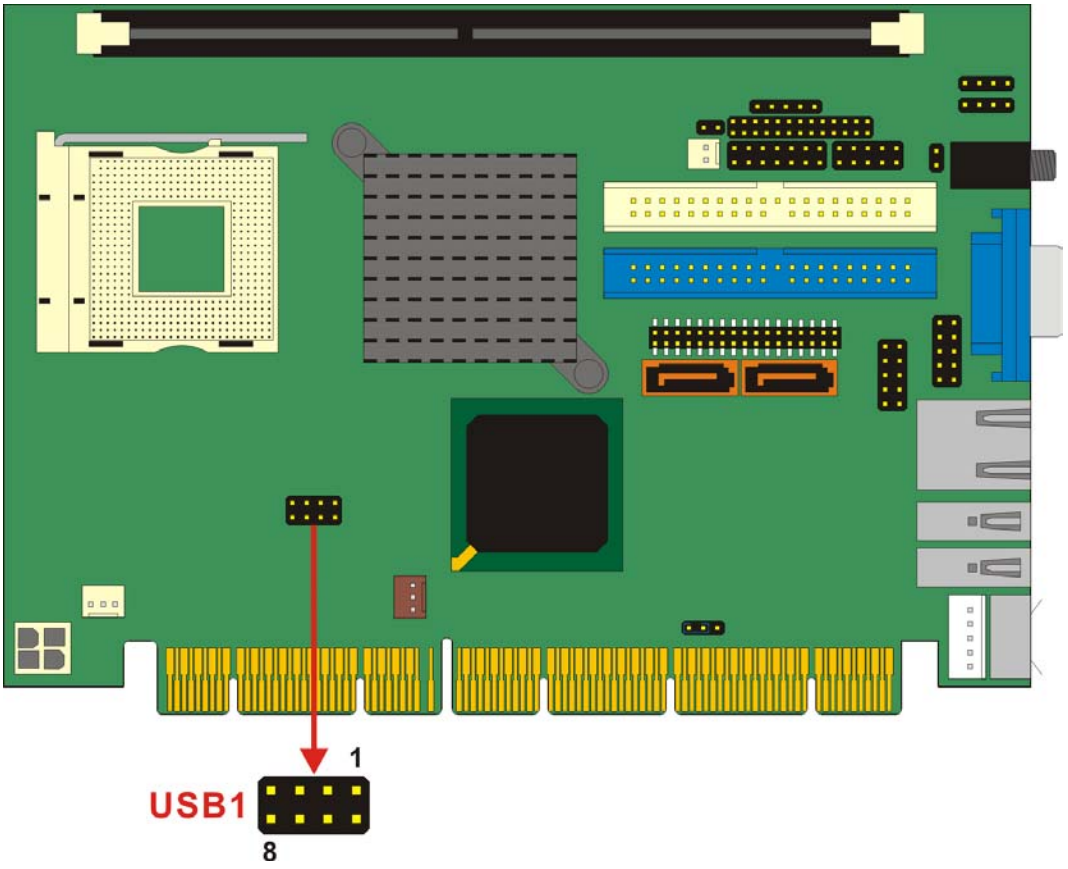

Figure 3-20: USB1 Connector Locations

3.3 External (Rear Panel) Connectors

Figure 3-21 shows the PCISA-8450G CPU card rear panel. The peripheral connectors on the back panel can connect to external devices when the CPU card is installed in a chassis. The peripheral connectors on the rear panel are:

- 1 x PS/2 keyboard/mouse connector
- 2 x USB connectors
- 1 x RJ-45 GbE connector
- 1 x VGA connector
- 1 x Line-out connector

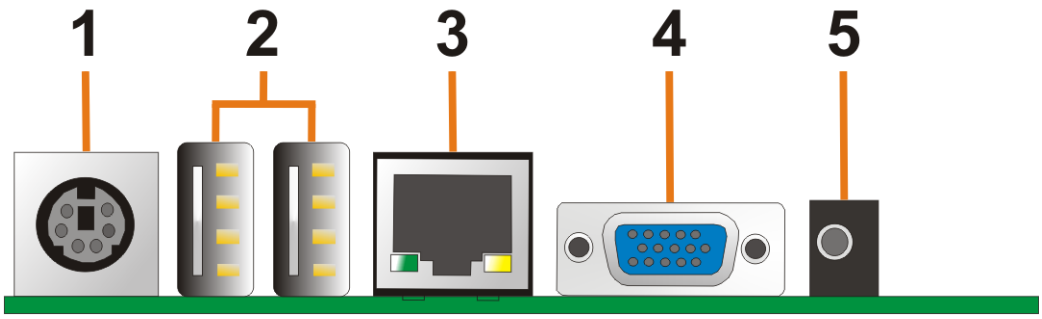

Figure 3-21: PCISA-8450G CPU Card Rear Panel

3.3.1 Keyboard/Mouse Connector

CN Label: **KB/MS1**

CN Type: **PS/2**

CN Location: **See Figure 3-21 (labeled number 1)**

CN Pinouts: **See Table 3-22, Figure 3-22 shows PS/2 Pinout locations**

The KB/MS1 PS/2 mouse and keyboard connector connects to a mouse and keyboard.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	KB DATA	2	MS DATA
3	GND	4	+5V
5	KB CLOCK	6	MS CLOCK

Table 3-22: KB/MS1 Pinouts

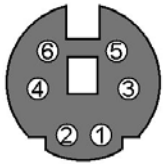

Figure 3-22: KB/MS1 Pinout locations

3.3.2 USB Connectors

CN Label: **USB3, USB2**

CN Type: **USB port**

CN Location: **See Figure 3-21 (labeled number 2)**

CN Pinouts: **See Table 3-23**

USB devices connect directly to the USB connectors on the rear panel.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	+5V	2	DATA-
3	DATA+	4	GND

Table 3-23: USB3, USB2 Connector Pinouts

3.3.3 Ethernet Connector

CN Label: **LAN1**

CN Type: **RJ-45**

CN Location: **See Figure 3-21 (labeled number 3)**

CN Pinouts: **See Table 3-24**

A 1Gb connection can be made between the Ethernet connector (**Figure 3-23**) and a Local Area Network (LAN) through a network hub.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	TXD+	8	GND
2	TXD-	9	GRN+
3	RXD+	10	GRN-
4	CT_TXD	11	YEL-
5	CT_RXD	12	YEL+
6	RXD-	13	S GND
7	N/C	14	S GND

Table 3-24: LAN1 Connector Pinouts

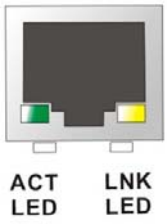

Figure 3-23: LAN1 Connector

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked (**Table 3-25**).

SPEED LED		ACT/LINK LED	
STATUS	**DESCRIPTION**	**STATUS**	**DESCRIPTION**
OFF	10 Mbps connection	OFF	No link
ORANGE	100 Mbps connection	YELLOW	Linked
GREEN	1 Gbps connection	BLINKING	Date activity

Table 3-25: LAN1 Connector LEDs

3.3.4 VGA Connector

CN Label: **VGA1**

CN Type: **See Figure 3-24**

CN Location: **See Figure 3-21 (labeled number 4)**

The standard 15-pin VGA connector connects to a CRT or LCD monitor.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	Red	9	No Connect
2	Green	10	Ground
3	Blue	11	No Connect
4	No Connect	12	DDC DAT
5	Ground	13	Horizontal Synchronization
6	Ground	14	Vertical Synchronization
7	Ground	15	DDC Clock
8	Ground		

Table 3-26: VGA1 Connector Pinouts

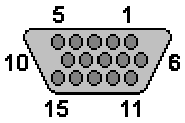

Figure 3-24: VGA1 Connector

3.3.5 Audio Line Out Connector

CN Label: **CN7**

CN Type: **Line Out Connector**

CN Location: **See Figure 3-21 (labeled number 5)**

Connect an audio device to the line out connector on the rear panel.

PIN NO.	DESCRIPTION
1	GND
2	Line-Out Left
3	N/C
4	Line-Out Right
5	N/C

Table 3-27: CN7 Connector Pinouts

3.4 Onboard Jumpers

NOTE:

A jumper is a metal bridge used to close an electrical circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.

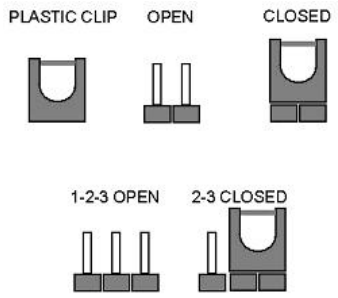

Figure 3-25: Jumper Locations

The PCISA-8450G CPU card has two onboard jumpers (**Table 3-3**).

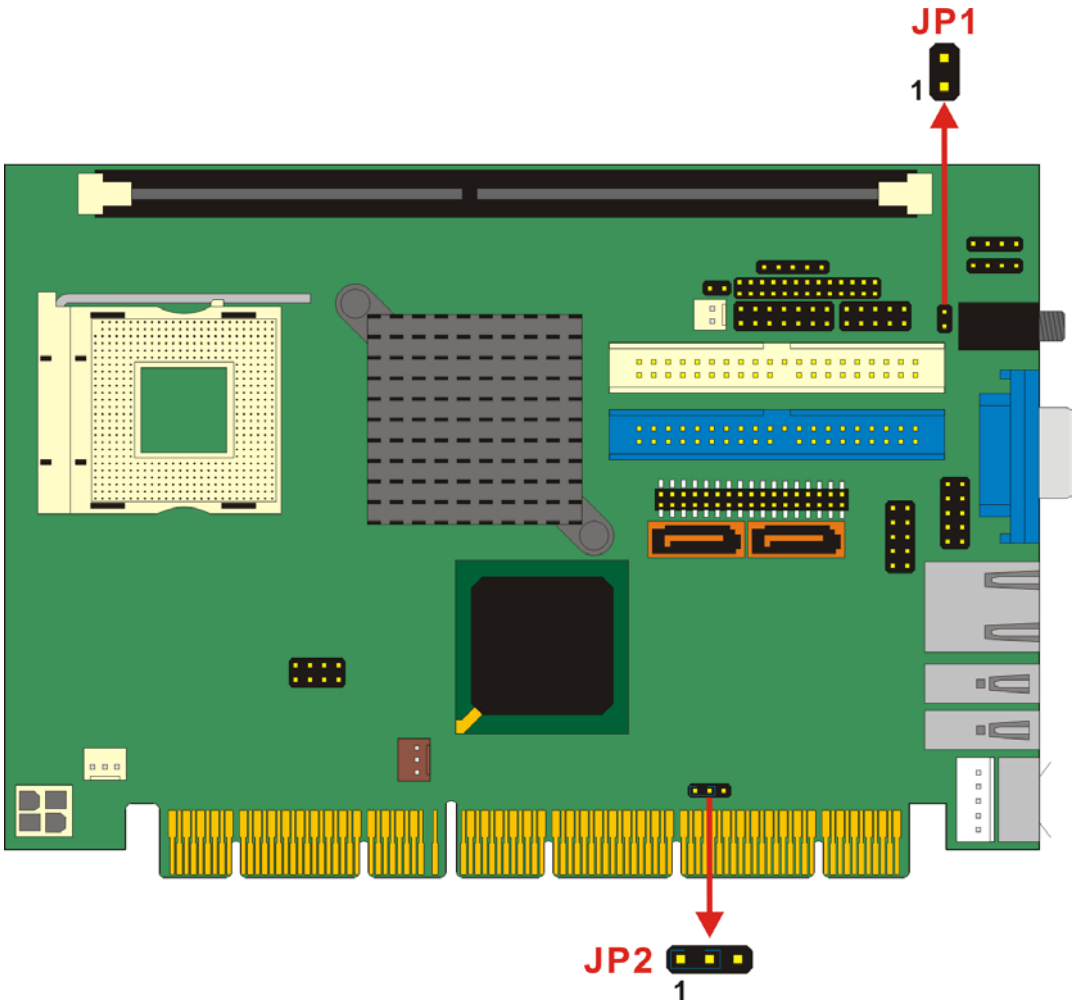

Figure 3-26: Jumper Locations

3.4.1 CF Card Setup Jumper

Jumper Label:	**JP1**
Jumper Type:	**2-pin header**
Jumper Settings:	**See Table 3-28**
Jumper Location:	**See Figure 3-25**

The JP1 jumper sets the CF card to "Master" or "Slave" on the IDE bus.

JP1	Description
Closed	Master
Open	Slave (default)

Table 3-28: CF Card Setup Jumper Settings

3.4.2 Reset CMOS Jumper

Jumper Label: **JP2**

Jumper Type: **3-pin header**

Jumper Settings: **See Table 3-29**

Jumper Location: **See Figure 3-25**

If the CPU card fails to boot due to improper BIOS settings, use this jumper to clear the CMOS data and reset the system BIOS information. To do this, use the jumper cap to close pins 2 and 3 for a few seconds then reinstall the jumper clip back to pins 1 and 2.

If the "**CMOS Settings Wrong**" message displays during the boot up process, press **F1** to enter the CMOS Setup menu, then do one of the following:

- Enter the correct CMOS setting
- Load Optimal Defaults
- Load Failsafe Defaults.

Save the changes and exit the CMOS Setup menu.

JP2	CLEAR CMOS
1-2 closed	Normal (default)
2-3 closed	Clear CMOS

Table 3-29: Reset CMOS Jumper Settings

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Chapter

4

Installation and Configuration

4.1 Installation Considerations

NOTE:

The following installation notices and installation considerations should be read and understood before the CPU card is installed. All installation notices pertaining to the installation of the CPU card should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the CPU card and injury to the person installing the CPU card.

4.1.1 Installation Notices

Before and during the installation of the PCISA-8450G CPU card:

- Read the user manual
  - The user manual provides a complete description of the PCISA-8450G CPU card, installation instructions and configuration options.
- Wear an electrostatic discharge cuff (ESD)
  - Electronic components are easily damaged by ESD. Wearing an ESD cuff will remove ESD and help to prevent ESD damage.
- Place the CPU card on an antistatic pad
  - When installing or configuring the CPU card, place it on an antistatic pad. This will help to prevent potential ESD damage.
- Turn off all power to the PCISA-8450G CPU card
  - When working with the CPU card, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the PCISA-8450G CPU card, **DO NOT**:

- Remove any of the stickers from the PCB. These stickers are required for warranty validation.

- Use the product before verifying that all cables and power connectors are properly connected.
- Allow screws to contact the PCB, connector pins, or its components.

4.2 Unpacking

NOTE:

If any of the items listed below are missing when the PCISA-8450G CPU card is unpacked, do not proceed with the installation and contact the reseller or vendor from whom the CPU card was purchased.

4.2.1 Unpacking Precautions

Unpack the PCISA-8450G CPU card before installing it. Some components on the PCISA-8450G are very sensitive to static electricity and can be damaged by a sudden rush of power. Follow these precautions to protect the CPU card from damage:

- Ground yourself to remove any static charge before touching the CPU card by wearing a grounded wrist strap at all times or by frequently touching any conducting material that is connected to the ground.
- Handle the CPU card by its edges. Do not touch the IC chips, leads, or circuitry if not necessary.

Do not place a PCB on top of an anti-static bag. Only the inside of the bag is safe from static discharge.

4.2.2 Checklist

Please ensure the package contains the following items.

- 1 x PCISA-8450G single card computer
- 1 x ATA66/100 HDD cable
- 2 x SATA cable
- 1 x SATA power cable
- 1 x RS-232 cable
- 1 x Keyboard/ PS2 mouse cable
- 1 x Power cable for P4
- 1 x mini jumper pack
- 1 x Utility CD
- 1 x QIG (quick installation guide)

If any of these items are missing, please contact the CPU card reseller or vendor and do not proceed any further with the installation.

4.3 PCISA-8450G CPU Card Installation

WARNING!

1. Never run the CPU card without an appropriate heat sink and cooler. The appropriate heat sink and cooler can be ordered from IEI Technology or purchased separately.
2. Use the CPU 12V power connector for the CPU power.

WARNING!

The installation instructions described in this manual should be carefully followed in order to avoid damage to the CPU card components and personal injury.

WARNING!

When installing electronic components onto the CPU card always follow anti-static precautions in order to prevent ESD damage to the CPU card and other electronic components like the CPU and DIMM modules

The following components must be installed on, or connected to the CPU card during the installation process.

- CPU
- CPU cooling kit
- DIMM modules
- Peripheral device connections

4.3.1 CPU Installation

WARNING!

CPUs are expensive and sensitive components and CPU connector pins are easily bent during installation. Use care to prevent damage when installing the CPU module in the socket. Make sure the CPU is properly installed and that a heat sink and cooling fan are installed before connecting power to the CPU card. Failure to do so may damage the CPU or card.

To install an Intel® 478 Socket CPU onto the PCISA-8450G card, follow the steps below:

Step 1: Make sure the CPU socket contacts are free of foreign material. Remove any debris with compressed air.

Step 2: Lift the lever on the side of the CPU socket (**Figure 4-1**).

Step 3: Make sure there are no bent pins on the CPU and the pin 1 mark matches the cut edge on the CPU socket (**Figure 4-1**).

Step 4: Place the CPU on top of the socket carefully.

Step 5: Insert the CPU into the socket gently.

Step 6: Lower the lever into the locked position.

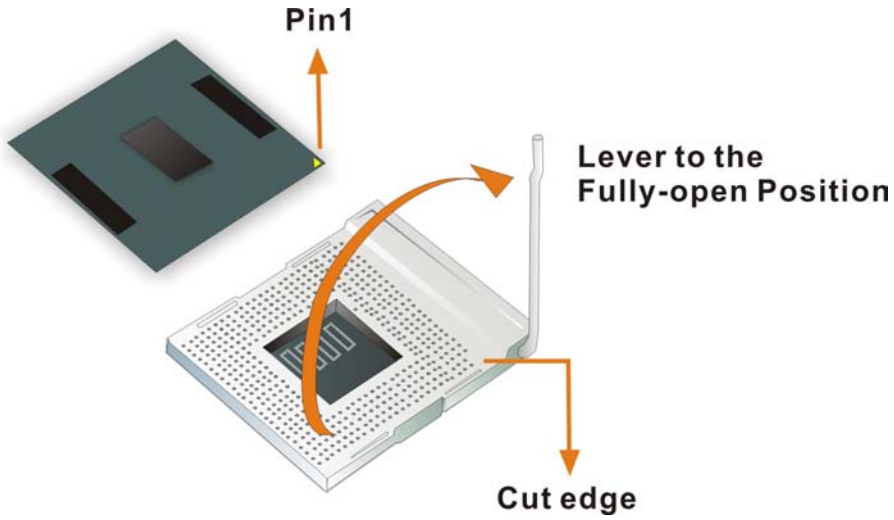


Figure 4-1: Locking the CPU into the CPU Socket

4.3.2 Optional Cooling Kit (CF-521-RS) Installation

Figure 4-2: IEI CF-521-RS Cooling Kit

IEI provides an optional cooling kit designed for Socket 478 CPUs (**Figure 4-2**). The cooling kit is comprised of a CPU heat sink and a cooling fan.

NOTE:

The CF-521-RS heat sink comes with a sprayed layer of thermal paste. **Do Not** wipe away the thermal paste while unpacking or installing the heat sink. Thermal paste between the CPU and the heat sink is important for optimum heat dissipation.

To install the CF-521-RS cooling kit, follow the steps below.

Step 1: **Place the cooling kit onto the CPU**. Make sure the CPU cable can be properly routed when the cooling kit is installed.

Step 2: **Properly align the cooling kit**. Make sure the four threaded screw fasteners can pass through the pre-drilled holes on the PCB.

Step 3: **Secure the cooling kit**. Align the nut caps with the heat sink screw threads that protrude through the PCB holes. Secure the cooling kit to the PCB card without over tightening the nut caps (**Figure 4-3**).

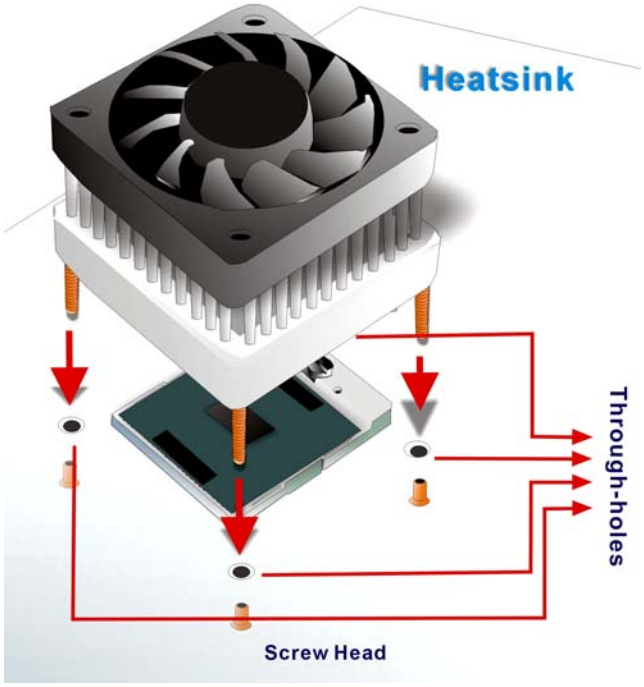


Figure 4-3: Securing the Cooling Kit

Step 4: **Connect the fan cable**. Connect the cooling kit fan cable to the FAN1 connector on the CPU card. Carefully route the cable and avoid chips and fan blades (**Figure 4-4**).

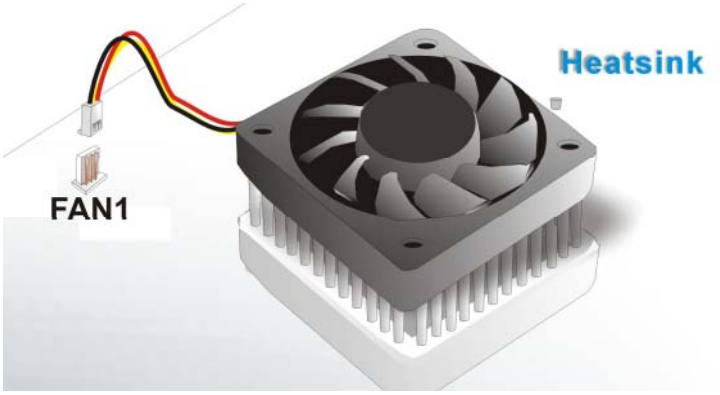


Figure 4-4: Connect the Cooling Fan Cable

4.3.3 DIMM Module Installation

4.3.3.1 Purchasing the Memory Module

The DIMM module can support a memory chip with a maximum size of 1GB.

4.3.3.2 DIMM Module Installation

The PCISA-8450G CPU card has one DDR SDRAM DIMM socket. Follow the steps below to install the DIMM module.

Step 1: Make sure the two handles of the DIMM socket are in the "open" position, leaning outward (**Figure 4-5**).

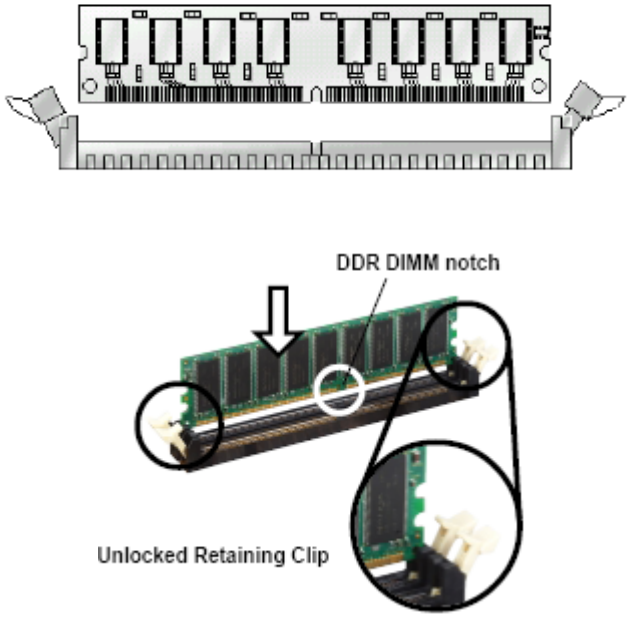


Figure 4-5: Installing the DIMM Module

Step 2: Slowly slide the DIMM module along the plastic guides on both ends of the socket. Press the DIMM module down into the socket until it clicks into position and the two handles have automatically locked the memory module into place (**Figure 4-6**).

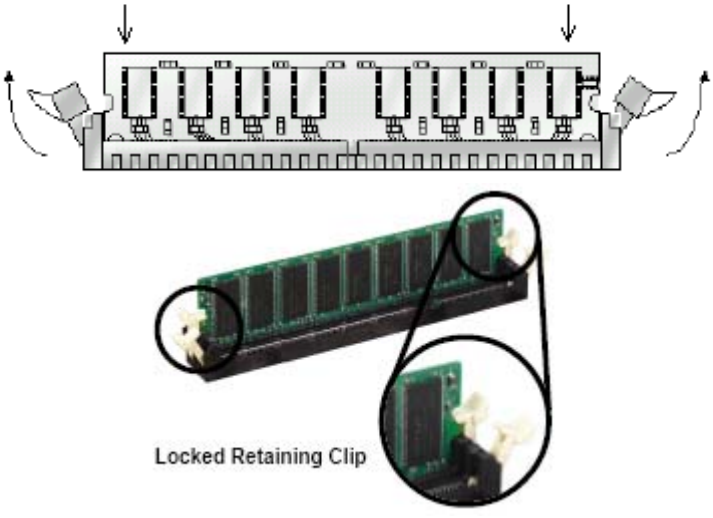


Figure 4-6: Locking the DIMM Module

Step 3: To remove the memory module, push both handles outward, and the memory module is ejected by the mechanism in the socket.

4.3.4 Peripheral Device Connection

Cables provided by IEI that connect peripheral devices to the CPU card are listed in **Table 4-1**. Cables not included in the kit must be purchased separately.

Quantity	Type
1	ATA66/100 HDD cable
2	SATA cable
1	SATA power cable
1	RS-232 cable
1	Keyboard/ PS2 mouse cable
1	Power cable for P4
1	mini jumper pack

Table 4-1: IEI Provided Cables

4.3.4.1 IDE Disk Drive Connector (IDE1)

The cable used to connect the CPU card to the IDE HDD is a standard 40-pin ATA 66/100 flat cable. Follow the instructions below to connect an IDE HDD to the CPU card.

Step 1: Find the ATA 66/100 flat cable in the kit that came with the CPU card.

Step 2: Connect one end of the cable to the IDE1 connector on the CPU card. A keyed pin on the IDE connectors prevents it from being connected incorrectly.

Step 3: Locate the red wire on the cable that corresponds to the pin 1 connector.

Step 4: Connect the cable to the HDD making sure that the pin 1 cable corresponds to pin 1 on the connector.

NOTE:

When two EIDE disk drives are connected together, back-end jumpers on the drives must be used to configure one drive as a master and the other as a slave.

4.4 Jumper Configuration

The PCISA-8450G CPU card has two onboard jumpers:

- CF Card Setup (JP1)
- Reset CMOS (JP2)

Make sure the jumper settings are properly configured before the PCISA-8450G CPU card is installed into a chassis. For more information about jumper settings and configurations, refer to **Section 3.4**.

4.5 Chassis Installation

The CPU card can be mounted into a chassis only after the CPU, the cooling kit, and the DIMM module has been installed, the internal peripheral connectors have been connected to the peripheral devices and the jumpers have been configured.

Refer to the chassis user guide for instructions on how to mount the CPU card into a chassis.

4.6 Rear Panel Connectors

4.6.1 PS/2 Connection

The rear panel PS/2 connector provides easy and quick access to external PS/2 devices such as a mouse or keyboard.

4.6.2 USB Connection

The rear panel USB connectors provide easy and quick access to external USB devices.

4.6.3 Ethernet Connection

The rear panel RJ-45 connector can be connected to an external LAN and communicate with data transfer rates up to 1Gb/s.

4.6.4 VGA Connection

The conventional CRT monitor connector, VGA1, is a 15-pin, female D-SUB connector. It can be connected to an external monitor. Pin assignments are shown in **Figure 3-24**.

4.6.5 Line Out Connection

The rear panel line out connector can be connected to an external audio output device.

Chapter

5

AMI BIOS Setup

5.1 Introduction

A licensed copy of AMI BIOS is preprogrammed into the ROM BIOS. The BIOS setup program allows modifications to the basic system configuration. This chapter describes how to access the BIOS setup program and the configuration options.

5.1.1 Starting Setup

The AMI BIOS is activated when the computer starts. The setup program can be activated in one of two ways.

1. Press the **DELETE** key as soon as the system starts.
2. Press the **DELETE** key when the "**Press Del to enter SETUP**" message appears on the screen.

If the message disappears before you respond, restart the computer and try again.

5.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the **PAGE UP** and **PAGE DOWN** keys to change entries, press **F1** for help and press **ESC** to quit.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left
Right arrow	Move to the item on the right
Esc	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu – Exit current page and return to Main Menu
Page Up	Increase the numeric value or make changes
Page Down	Decrease the numeric value or make changes
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2/F3	Changes screen color.
F10	Save all CMOS changes, only for Main Menu

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

Press **F1** and a small help window appears describing the appropriate keys to use and the possible selections for the highlighted item. Press the **Esc** or **F1** key again to exit the Help Window.

5.1.4 Unable to Reboot After Configuration Changes

If the computer is unable to reboot after changing the system configuration, restore the CMOS defaults using the jumper described in **Chapter 3**, **Section 3.4.2**.

5.1.5 BIOS Main Menu

Once the BIOS opens, the main menu (**BIOS Menu 1**) appears.

AMIBIOS HIFLEX SETUP UTILITY - VERSION 1.55
(C)2001 American Megatrends, Inc. All Rights Reserved
Standard CMOS Setup
Advanced CMOS Setup
Advanced Chipset Setup
Power Management Setup
PCI / Plug and Play Setup
Peripheral Setup
Hardware Monitor Setup
Auto-Detect Hard Disks
Change User Password
Change Supervisor Password
Auto Configuration with Optimal Settings
Auto Configuration with Fail Safe Settings
Save Settings and Exit
Exit Without Saving
Standard CMOS setup for changing time, date, hard disk type, etc.
ESC:Exit ↑↓:Sel F2/F3:Color F10:Save & Exit

BIOS Menu 1: BIOS Main Menu

NOTE:

The following sections will completely describe the menus listed below and the configuration options available to users.

The following menu options are available in **BIOS Menu 1**.

- **Standard CMOS Setup**: Standard CMOS setup for changing time, date, hard disk type, etc.
- **Advanced CMOS Setup**: Advanced CMOS setup for configuring system options.
- **Advanced Chipset Setup**: Advanced chipset setup for configuring chipset features.
- **Power Management Setup**: Power management setup for configuring power management features.
- **PCI / Plug and Play Setup**: Configure PCI / Plug and Play features.
- **Peripheral Setup**: Configure peripheral features.
- **Hardware Monitor Setup**: Configure hardware monitor features.
- **Auto-Detect Hard Disks**: Auto-detect all hard disk parameters.

The following user configurable options are also available in the BIOS Main Menu

➔ **Change User Password**

This option is available only if a supervisor password has been set. By default, no user password is set. To create a user password, select this option and press **ENTER**. A dialogue box appears with **"Enter new user password: "**. Type the new password and press **ENTER**. Retype the password in the **"Retype new user password: "** dialogue box and press **ENTER**. A **"New user password installed, press any key to continue: "** confirmation dialogue box appears. Press any key to return to the BIOS main menu.

➔ **Change Supervisor Password**

By default, no supervisor password is set. To create a supervisor password, select this option and press **ENTER**. A dialogue box appears with **"Enter new supervisor password: "**. Type the new password and press **ENTER**. Retype the password in the **"Retype new supervisor password: "** dialogue box and press **ENTER**. A **"New supervisor password installed, press any key to continue: "** confirmation dialogue box appears. Press any key to return to the BIOS main menu.

➔ **Auto Configuration with Optimal Settings**

This option loads optimal configuration settings giving highest performance. To load the optimal configuration settings, select this option and press **ENTER**. A dialogue box appears with **"Load high performance settings (Y/N)? "**. Type **Y** or **N** and press **ENTER**.

➔ **Auto Configuration with Fail Safe Settings**

This option loads fail-safe configuration settings. To load the fail-safe configuration settings, select this option and press **ENTER**. A dialogue box appears with **"Load failsafe settings (Y/N)? "**. Type **Y** or **N** and press **ENTER**.

➔ **Save Settings and Exit**

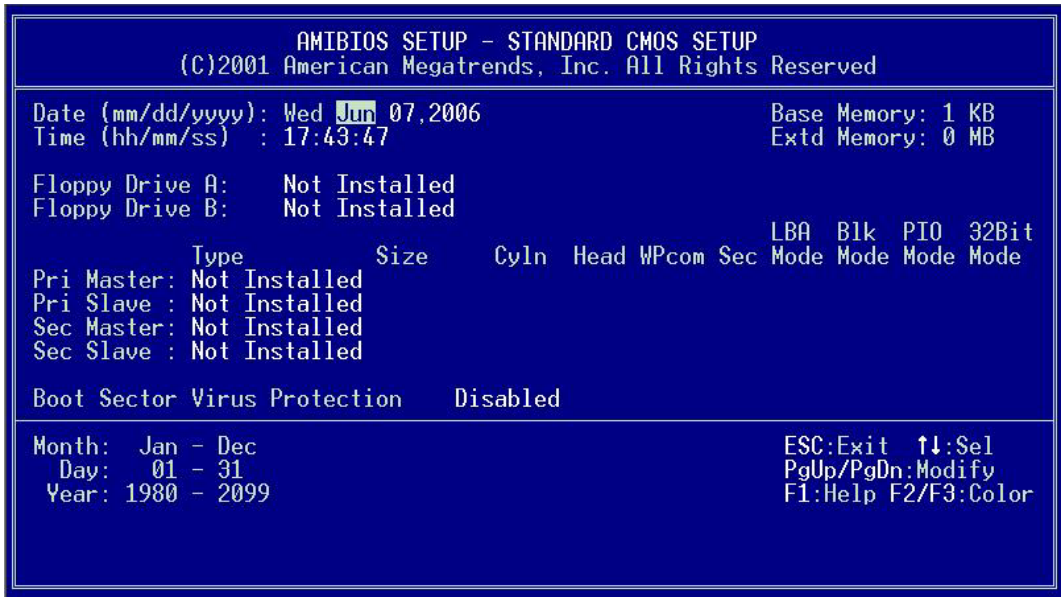
This option saves the configuration settings. To save the current configuration settings, select this option and press **ENTER**. A dialogue box appears with **"Save current settings and exit (Y/N)? "**. Type **Y** and press **ENTER** to save the current settings and exit, or type **N** and press **ENTER** to return to the BIOS main menu.

➔ **Exit Without Saving**

This option exits the BIOS menu without saving the configuration settings. To exit the BIOS menu without saving the configuration settings, select this option and press **ENTER**. A dialogue box appears with **"Quit without saving (Y/N)? "**. Type **Y** and press **ENTER** to exit the BIOS utility without saving the configuration settings, or type **N** and press **ENTER** to return to the BIOS main menu.

5.2 Standard CMOS Setup

The **Standard CMOS Setup** menu (**BIOS Menu 2**) changes basic BIOS configuration options.


AMIBIOS SETUP - STANDARD CMOS SETUP
(C)2001 American Megatrends, Inc. All Rights Reserved
Date (mm/dd/yyyy): Wed Jun 07,2006
Time (hh/mm/ss) : 17:43:47
Base Memory: 1 KB
Extd Memory: 0 MB
Floppy Drive A: Not Installed
Floppy Drive B: Not Installed
Type Size Cyln Head WPcom Sec LBA Mode Blk Mode PIO Mode 32Bit Mode
Pri Master: Not Installed
Pri Slave : Not Installed
Sec Master: Not Installed
Sec Slave : Not Installed
Boot Sector Virus Protection Disabled
Month: Jan - Dec
Day: 01 - 31
Year: 1980 - 2099
ESC:Exit ↑↓:Sel
PgUp/PgDn:Modify
F1:Help F2/F3:Color

BIOS Menu 2: Standard CMOS Setup Menu

The Standard CMOS Setup menu (**BIOS Menu 2**) has the following options that are not user configurable:

➔ **Base Memory**

The **Base Memory** is NOT user configurable. The POST will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the CPU card or 640K for systems with 640K or more memory installed on the CPU card.

➔ **Extd Memory**

The **Extd Memory** is NOT user configurable. The BIOS determines how much extended memory is present during the POST. This is the amount of memory above 1MB located in the memory address map of the CPU.

The Standard CMOS Setup menu (**BIOS Menu 2**) has the following user configurable options:

➔ **Date [mm:dd:yyyy]**

The **Date** option sets the system date.

➔ **Time [hh/mm/ss]**

The **Time** option sets the system time.

➔ **Floppy Drive A: [1.44 MB 3½]**

The **Floppy Drive A** configuration option determines the type of floppy drive installed in the system. The floppy drive configuration options are listed below.

- Not Installed
- 1.2 MB 5¼
- 720 KB 3½
- 1.44 MB 3½ (Default)
- 2.88 MB 3½

➔ **Floppy Drive B: [Not Installed]**

The **Floppy Drive B** configuration option determines the type of floppy drive installed in the system. The floppy drive configuration options are listed below.

- Not Installed (Default)
- 1.2 MB 5¼
- 720 KB 3½
- 1.44 MB 3½
- 2.88 MB 3½

➔ **Pri Master, Pri Slave, Sec Master and Sec Slave**

BIOS auto detects the presence of IDE devices and the Pri Master, Pri Slave, Sec Master and Sec Slave options display the status of the auto detected IDE devices. The following IDE devices are detected:

- **Pri Master:** Primary IDE Master
- **Pri Slave:** Primary IDE Slave
- **Sec Master:** Secondary IDE Master
- **Sec Slave:** Secondary IDE Slave

The Pri Master, Pri Slave, Sec Master and Sec Slave options set the configurations for the IDE devices installed in the system. If an IDE device is detected, the following IDE configuration options appear:

➔ **Type [Auto]**

The **Type** BIOS option determines the type of device that the AMIBIOS attempts to boot from after the Power-On Self-Test (POST) has completed.

➔ **Not Installed**		Selecting this value prevents the BIOS from searching for an IDE disk drive on the specified channel.
➔ **Auto**	(Default)	This selection enables the BIOS to auto detect the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel.
➔ **CD/DVD**		The CD/DVD option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS will not attempt to search for other types of IDE disk drives on the specified channel.
➔ **ARMD**		This option specifies an ATAPI Removable Media Device. These include, but are not limited to: ➔ **ZIP** ➔ **LS-120**

- **User** — This option allows user defined IDE device parameters.
- **1 - 46** — These options load predefined IDE device parameters.

➔ **Size**

The **Size** specification indicates the storage capacity of the HDD installed in the system.

➔ **Cyln**

The **Cyln** specification indicates the number of cylinders (tracks) on the HDD installed in the system.

➔ **Head**

The **Head** specification indicates the number of logical heads on the HDD installed in the system.

➔ **WPcom**

The **WPcom** specification indicates on which track the write precompensation begins.

➔ **Sec**

The **Sec** specification indicates how many logical sectors the HDD is divided into.

➔ **LBA Mode [On]**

The **LBA Mode** option specifies whether the LBA (Logical Block Addressing) method of addressing data on a disk drive is supported or not.

- **On** (Default) — LBA addressing is supported.
- **Off** — LBA addressing is not supported.

➔ **Blk Mode [On]**

The **Blk Mode** option boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.

➔	**On**	(Default)	Block Mode on.
➔	**Off**		Block Mode off.

➔ **PIO Mode [Auto]**

The **PIO Mode** option selects the IDE PIO (Programmable I/O) mode program timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.

➔	**Auto**	(Default)	This setting allows the BIOS to auto detect the PIO mode. Use this value if the IDE disk drive support cannot be determined.
➔	**0**		PIO mode 0 selected with a maximum transfer rate of 3.3MBps
➔	**1**		PIO mode 1 selected with a maximum transfer rate of 5.2MBps
➔	**2**		PIO mode 2 selected with a maximum transfer rate of 8.3MBps
➔	**3**		PIO mode 3 selected with a maximum transfer rate of 11.1MBps
➔	**4**		PIO mode 4 selected with a maximum transfer rate of 16.6MBps (This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.)
➔	**5**		PIO mode 5 selected with a maximum transfer rate of 22.2MBps

➔ **32Bit Mode [Off]**

The **32Bit Mode** option enables or disables 32-bit data transfers.

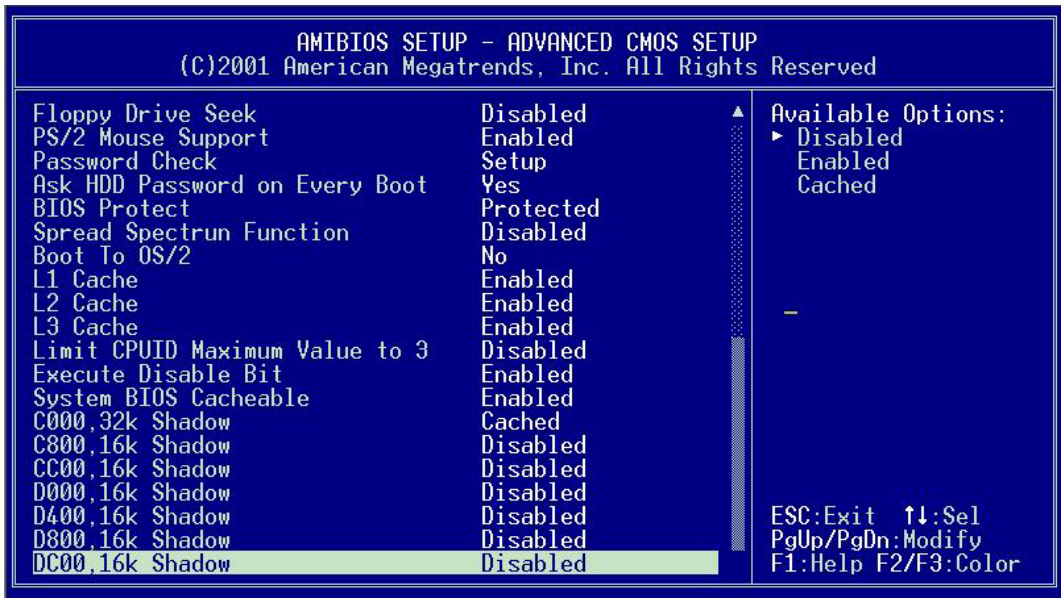
- ➔ **Off** (Default) Prevents the BIOS from using 32-bit data transfers.
- ➔ **On** Allows BIOS to use 32-bit data transfers on support hard disk drives.

➔ **Boot Sector Virus Protection [Disabled]**

- ➔ **Disabled** (Default) Disables the boot sector virus protection
- ➔ **Enabled** Enables the boot sector virus protection

5.3 Advanced CMOS Setup

The Advanced CMOS Setup menu (**BIOS Menu 3**) accesses the CPU configuration options.



BIOS Menu 3: Advanced CMOS Setup Menu

The following configuration options are available:

➔ **Quick Boot [Disabled]**

The **Quick Boot** BIOS option makes the computer speed up the boot process.

➔ **Disabled**	(Default)	System does not skip any POST procedures
➔ **Enabled**		Allows system to skip some POST procedures to decrease the system boot time

➔ **1st Boot Device [Disabled]**

The **1st Boot Device** option selects the device the computer will boot from first. The following list contains, but is not limited to, the boot devices a computer can boot from.

➔ **Disabled**		The computer does not boot from this device
➔ **IDE-0**	(Default)	The computer boots from the IDE-0 device
➔ **CD/DVD-0**		The computer boots from the CD/DVD-0 device

➔ **2nd Boot Device [Disabled]**

The **2nd Boot Device** option selects the device the computer will boot from second. The computer boots from this device if it cannot boot from the first device, or if the first boot device is disabled. The following list contains, but is not limited to, the boot devices a computer can boot from.

➔ **Disabled**	(Default)	The computer does not boot from this device
➔ **IDE-0**		The computer boots from the IDE-0 device
➔ **CD/DVD-0**		The computer boots from the CD/DVD-0 device

➔ **3rd Boot Device [Disabled]**

The **3rd Boot Device** option selects the device the computer will boot from third. The computer boots from this device if it cannot boot from the first or second devices, or if the

first or second boot devices are disabled. The following list contains, but is not limited to, the boot devices a computer can boot from.

- ➔ **Disabled** (Default) The computer does not boot from this device
- ➔ **IDE-0** The computer boots from the IDE-0 device
- ➔ **CD/DVD-0** The computer boots from the CD/DVD-0 device

➔ **Try Other Boot Devices [Yes]**

The **Try Other Boot Devices** option determines whether the CPU card uses a second or third boot device if the first boot device is not found.

- ➔ **Yes** (Default) The system looks for second and third boot devices if the first one is not found
- ➔ **No** The system does not look for second and third boot device if the first one is not found

➔ **S.M.A.R.T. for Hard Disks [Disabled]**

The Self-Monitoring Analysis and Reporting Technology (SMART) feature can help predict impending drive failures. The **S.M.A.R.T. for Hard Disks** option enables or disables this function.

- ➔ **Disabled** (Default) Select this value to prevent the BIOS from using the SMART feature.
- ➔ **Enabled** Select this value to allow the BIOS to use the SMART feature on support hard disk drives.

➔ **BootUp Num-Lock [On]**

The **BootUp Num-Lock** option allows the Number Lock setting to be modified during boot up.

➔ **Off** Does not enable the keyboard number lock automatically. To use the 10-keys on the keypad, press the **NUM LOCK** key located on the upper left-hand corner of the 10-key pad. The **NUM LOCK** LED on the keyboard lights up when the number lock is engaged.

➔ **On** (Default) Allows the number lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the **NUM LOCK** LED light on the keyboard is lit.

➔ **Floppy Drive Swap [Disabled]**

The **Floppy Drive Swap** option allows drive A to be designated as drive B and drive B to be designated as drive A.

➔ **Disabled** (Default) Cannot designate A or B to a floppy drive without changing the physical connection

➔ **Enabled** Can designate A or B to a floppy drive without changing the physical connection

➔ **Floppy Drive Seek [Disabled]**

During the POST, BIOS determines if the floppy disk drive installed has 40 or 80 tracks. 360K FDDs have 40 tracks while 760K, 1.2M and 1.44M FDDs all have 80 tracks

➔ **Enabled** BIOS searches for an FDD to determine if it has 40 or 80 tracks. Note that BIOS cannot tell the difference between 720K, 1.2M or 1.44M drives as they all have 80 tracks.

➔ **Disabled** (Default) BIOS does not search for the type of FDD drive by track number. Note that there are no warning message if the

drive installed is 360K.

➔ **PS/2 Mouse Support [Enabled]**

The **PS/2 Mouse Support** option allows the PS/2 mouse support to be adjusted.

➔	**Disabled**		Disables PS/2 mouse support and prevents the PS/2 mouse port from using system resources.
➔	**Enabled**	(Default)	Allows the system to use a PS/2 mouse.

➔ **Password Check [Setup]**

The **Password Check** option specifies when a user is prompted for the password.

➔	**Setup**	(Default)	Users have to enter their password only when they enter the **Setup Utility**
➔	**Always**		Users have to enter their password whenever they boot the computer

➔ **BIOS Protect [Normal]**

The **BIOS Protect** option controls write access to the BIOS. In **Protected** mode, BIOS is write-protected and cannot be flashed/updated.

➔	**Normal**		BIOS can be flashed/updated normally.
➔	**Protected**	(Default)	BIOS is protected from being flashed/updated.

➔ **Spread Spectrum Function [Disabled]**

The **Spread Spectrum Function** option can help to improve CPU EMI issues.

➔	**Disabled**	(Default)	The spread spectrum function is disabled
➔	**Enabled**		The spread spectrum function is enabled

➔ **Boot to OS/2 [No]**

The **Boot to OS/2** option specifies the operating system used as OS/2.

➔ **No**	(Default)	Select when not using the OS/2 operating system
➔ **Yes**		Select when using the OS/2 operating system

➔ **L1 Cache [Enabled]**

The **L1 Cache** option sets whether the CPU primary cache (L1) is turned on or off.

➔ **Enabled**	(Default)	The L1 CPU cache is turned on
➔ **Disabled**		The L1 CPU cache is turned off

➔ **L2 Cache [Disabled]**

The **L2 Cache** option sets whether the CPU secondary cache (L2) is turned on or off.

➔ **Enabled**	(Default)	The L2 CPU cache is turned on
➔ **Disabled**		The L2 CPU cache is turned off

➔ **System BIOS Cacheable [Disabled]**

The **System BIOS Cacheable** option allows the system BIOS to be cached in the L2 cache.

➔ **Disabled**	(Default)	System BIOS is not cached in the L2 cache
➔ **Enabled**		System BIOS is cached in the L2 cache

➔ **C000, 32k Shadow [Cached]**

When this option is set to Enabled, the Video ROM area from C0000-C7FFF is copied (shadowed) to the RAM for faster execution.

➔ **Disabled**		The contents of the video ROM are not copied to the RAM
➔ **Enabled**		The contents of the video ROM area from C0000h - C7FFFh are copied (shadowed) from the ROM to the RAM for faster execution
➔ **Cached**	(Default)	The contents of the video ROM area from C0000h - C7FFFh are copied from the ROM to the RAM and can be written to or read from the cache memory

➔ **C800, 16k Shadow [Disabled]**

This option enables shadowing of the contents of the ROM area named in the option title. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.

➔ **Disabled**	(Default)	The contents of the ROM area are not copied to the RAM
➔ **Enabled**		The contents of the ROM area are copied (shadowed) from the ROM to the RAM for faster execution
➔ **Cached**		The contents of the ROM area are copied from the ROM to the RAM and can be written to or read from the cache memory

➔ **CC00, 16k Shadow [Disabled]**

This option enables shadowing of the contents of the ROM area named in the option title. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.

➔ **Disabled**	(Default)	The contents of the ROM area are not copied to the RAM
➔ **Enabled**		The contents of the ROM area are copied (shadowed) from the ROM to the RAM for faster execution
➔ **Cached**		The contents of the ROM area are copied from the ROM to the RAM and can be written to or read from the cache memory

➔ **D000, 16k Shadow [Disabled]**

This option enables shadowing of the contents of the ROM area named in the option title. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.

➔ **Disabled**	(Default)	The contents of the ROM area are not copied to the RAM
➔ **Enabled**		The contents of the ROM area are copied (shadowed) from the ROM to the RAM for faster execution
➔ **Cached**		The contents of the ROM area are copied from the ROM to the RAM and can be written to or read from the cache memory

➔ **D400, 16k Shadow [Disabled]**

This option enables shadowing of the contents of the ROM area named in the option title. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.

➔ **Disabled**	(Default)	The contents of the ROM area are not copied to the RAM

➔ **Enabled** The contents of the ROM area are copied (shadowed) from the ROM to the RAM for faster execution

➔ **Cached** The contents of the ROM area are copied from the ROM to the RAM and can be written to or read from the cache memory

➔ **D800, 16k Shadow [Disabled]**

This option enables shadowing of the contents of the ROM area named in the option title. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.

➔ **Disabled** (Default) The contents of the ROM area are not copied to the RAM

➔ **Enabled** The contents of the ROM area are copied (shadowed) from the ROM to the RAM for faster execution

➔ **Cached** The contents of the ROM area are copied from the ROM to the RAM and can be written to or read from the cache memory

➔ **DC00, 16k Shadow [Disabled]**

This option enables shadowing of the contents of the ROM area named in the option title. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.

➔ **Disabled** (Default) The contents of the ROM area are not copied to the RAM

➔ **Enabled** The contents of the ROM area are copied (shadowed) from the ROM to the RAM for faster execution

➔ **Cached** The contents of the ROM area are copied from the ROM to the RAM and can be written to or read from the cache memory

5.4 Advanced Chipset Setup

The **Advanced Chipset Setup** menu (**BIOS Menu 4**) accesses the chipset configuration options.

AMIBIOS SETUP - ADVANCED CHIPSET SETUP
(C)2001 American Megatrends, Inc. All Rights Reserved
******** DRAM Timing ********
SDRAM Frequency Auto
Configure SDRAM Timing by SPD Enabled
SDRAM CAS# Latency 2.5 Clocks
SDRAM RAS# Precharge 3 Clocks
SDRAM RAS# to CAS# Delay 3 Clocks
SDRAM Precharge Delay 7 Clocks
SDRAM Burst Length 4
Memory Hole Disabled
Hyper Threading Function Enabled
MPS Revision 1.4
APIC ACPI SCI IRQ Disabled
Internal Graphics Mode Select 8MB
AGP Aperture Size 64MB
USB Controller 4 USB Ports
USB 1.1 Device Legacy Support All Device
USB 1.1 Port 64/60 Emulation Disabled
Available Options:
200Mhz
266Mhz
► Auto
ESC:Exit ↑↓:Sel
PgUp/PgDn:Modify
F1:Help F2/F3:Color

BIOS Menu 4: Advanced CMOS Setup Menu

WARNING!

Setting the wrong values for the Chipset BIOS options in the **Advanced Chipset Setup** menu may cause the system to malfunction.

➔ **SDRAM Frequency [200mhZ]**

The **SDRAM Frequency** option specifies the SDRAM frequency or allow the system to automatically detect the SDRAM frequency.

➔ **200MHz** (Default) Sets the SDRAM frequency to 200MHz

- ➔ **266MHz** Sets the SDRAM frequency to 266MHz
- ➔ **333MHz** Sets the SDRAM frequency to 333MHz
- ➔ **Auto** Automatically selects the SDRAM frequency

➔ **Configure SDRAM Timing by SPD [Disabled]**

The **Configure SDRAM Timing by SPD** option determines if the system uses the SPD (Serial Presence Detect) EEPROM to configure the SDRAM timing. The SPD EEPROM contains all necessary DIMM specifications the including speed of the individual components such as CAS and bank cycle time as well as valid settings for the module and the manufacturer's code. The SPD enables the BIOS to read the spec sheet of the DIMMs on boot-up and then adjust the memory timing parameters accordingly.

- ➔ **Disabled** SDRAM timing parameters can be manually set using the SDRAM sub-items
- ➔ **Enabled** (Default) SDRAM timing parameter are set according to the SDRAM Serial Presence Detect (SPD)

➔ **SDRAM CAS# Latency [2.5 Clocks]**

The **Configure SDRAM Timing by SPD** option must be disabled in order to change this configuration option. The **SDRAM CAS# Latency** configuration option refers to the Column Address Strobe (CAS) delay time. The following configuration options are available:

- 2.5 Clocks (Default)
- 2 Clocks
- 1.5 Clocks

➔ **SDRAM RAS# Precharge [3 clocks]**

The **Configure SDRAM Timing by SPD** option must be disabled in order to change this configuration option. The **SDRAM RAS# Precharge** option indicates how fast the RAM

can terminate the access of one row and start accessing another. The following configuration options are available:

- 3 clocks (Default)
- 2 clocks

➔ **SDRAM RAS# to CAS# Delay [3 Clocks]**

The **Configure SDRAM Timing by SPD** option must be disabled in order to change this configuration option. The **SDRAM RAS# to CAS# Delay** option sets the delay between the RAS and CAS signals. The following configuration options are available:

- 3 clocks (Default)
- 2 clocks

➔ **SDRAM Precharge Delay [7 clocks]**

The **Configure SDRAM Timing by SPD** option must be disabled in order to change this configuration option. The **SDRAM Precharge Delay** option sets the time it takes for the RAS to start retrieving the actual data after a request has been issued to the memory module. The following configuration options are available,

- 7 clocks (Default)
- 6 clocks
- 5 clocks

➔ **SDRAM Burst Length [4]**

The **Configure SDRAM Timing by SPD** option must be disabled in order to change this configuration option. The **SDRAM Burst Length** option selects the reads/writes per burst transaction. The following options are available:

- 4 → 4 reads or writes per burst transaction (Default)
- 8 → 8 reads or writes per burst transaction

➔ **Memory Hole [Disabled]**

The **Memory Hole** option reserves the memory space between 15MB and 16MB for ISA expansion cards that require a specified area of memory to work properly. If an older ISA expansion card is used, please refer to the documentation that came with the card to see if it is necessary to reserve the space.

➔ **Disabled**	(Default)	Memory is not reserved for ISA expansion cards
➔ **15MB-16MB**		Memory is reserved for ISA expansion cards

➔ **Hyper Threading Function [Disabled]**

➔ **Disabled**	(Default)	Disables the use of hyper threading technology
➔ **Enabled**		Enables the use of hyper threading technology

➔ **MPS Revision [1.1]**

The Multiprocessor Specification (MPS) for OS specifies the MPS version used.

➔ **1.1**	(Default)	MPS version 1.1 is used
➔ **1.4**		MPS version 1.4 is used

➔ **APIC ACPI SCI IRQ [Disabled]**

Enables or disables the internal I/O APIC and Multiprocessor Tables.

WARNING!

Disabling the APIC ACPI SCI IRQ may require reinstalling the OS.

➔ **Disabled**	(Default)	Disables the internal I/O APIC and multiprocessor tables

➔ **Enabled** Enables the internal I/O APIC and multiprocessor tables

➔ **Internal Graphics Mode Select [1MB]**

The **Internal Graphic Mode Select** option determines the amount of system memory that can be used by the Internal graphics device.

➔ **Disabled**

➔ **512KB** 512KB of memory used by internal graphics device

➔ **Enable, 1MB** (Default) 1MB of memory used by internal graphics device

➔ **Enable, 8MB** 8MB of memory used by internal graphics device

➔ **AGP Aperture Size [64MB]**

The **AGP Aperture Size** option selects the size of the AGP aperture. The aperture is a portion of the PCI memory address range dedicated as graphics memory address space.

➔ **4MB** Graphics aperture size set as 4MB

➔ **8MB** Graphics aperture size set as 8MB

➔ **16MB** Graphics aperture size set as 16MB

➔ **32MB** Graphics aperture size set as 32MB

➔ **64MB** (Default) Graphics aperture size set as 64MB

➔ **128MB** Graphics aperture size set as 128MB

➔ **256MB** Graphics aperture size set as 256MB

➔ **USB Controller [Disabled]**

The **USB Controller** option activates or deactivates the onboard USB controller.

➔ **Disabled** The USB controller is deactivated

➔ **2 USB ports** The USB controller activates 2 USB ports

➔ **4 USB ports** (Default) The USB controller activates 4 USB ports

➔ **USB 1.1 Device Legacy Support**

The **USB Controller** option must not be disabled in order to change this configuration option. The **USB 1.1 Device Legacy Support** option refers to USB mouse and USB keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded on the system.

➔ **Disabled** Legacy USB support disabled

➔ **No Mice** Legacy USB support disabled for mice

➔ **All Device** (Default) Legacy USB support enabled for all devices

➔ **USB 1.1 Port 64/60 Emulation [Disabled]**

The **USB Controller** option must not be disabled in order to change this configuration option. The **USB 1.1 Port 64/60 Emulation** option enables or disables the “Port 60h/64h” trapping option. Port 60h/64h trapping allows the BIOS to provide full PS/2 based legacy support for the USB keyboard and mouse. This option is useful for the Microsoft Windows NT Operating System and for multi-language keyboards. Also, this option provides the PS/2 functionalities like keyboard locking, password setting, scan code selection, etc. to USB keyboards.

➔ **Disabled** (Default) Port 60h/64h trapping option enabled

➔ **Enabled** Port 60h/64h trapping option disabled

5.5 Power Management Setup

The **Power Management Setup** menu (**BIOS Menu 5**) sets the power management and saving features in the BIOS.

BIOS Menu 5: Power Management Setup Menu

➔ **Power Type [AT]**

The **Power Type** option specifies the power supply type.

➔ **AT**		specifies the power supply type as AT
➔ **ATX**	(Default)	specifies the power supply type as ATX

➔ **ACPI Aware O/S [Yes]**

The **Power Type** option must be set to ATX in order to change this configuration option. **ACPI Aware O/S** can only be configured the OS complies with the ACPI standard. Windows 98, Windows 2000, and Windows XP all comply with ACPI.

➔ **No**		Disables the ACPI support for the OS. This selection should be disabled if the OS does not support ACPI
➔ **Yes**	(Default)	Enables the ACPI support for the operating system. This selection should be enabled if the OS supports ACPI

➔ **Restore on AC Power Loss [Last State]**

The **Power Type** option must be set to ATX in order to change this configuration option. The **Restore on AC Power Loss** option specifies what state the system returns to if there is a sudden loss of power to the system.

➔ **Power Off**		The system remains turned off
➔ **Power On**		The system turns on
➔ **Last State**	(Default)	The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

➔ **Power Button Function [On/Off]**

The **Power Type** option must be set to ATX in order to change this configuration option. The **Power Button Function** option specifies how the power button functions.

- ➔ **On/Off** (Default) When the power button is pressed the system is either turned on or off
- ➔ **Suspend** When the power button is pressed the system goes into suspend mode

➔ **Power Management/APM [Disabled]**

The **Power Management/APM** option accesses the advanced power management features.

- ➔ **Disabled** (Default) Disables the Advanced Power Management (APM) feature
- ➔ **Enabled** Enables the APM feature

➔ **Video Power Down Mode [Disabled]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **Video Power Down Mode** option specifies in what system mode the video device can be turned off.

- ➔ **Disabled** (Default) The Video cannot be turned off in the Suspend or Standby mode
- ➔ **Standby** The video can be turned off in the Standby mode
- ➔ **Suspend** The video can be turned off in the Suspend mode

➔ **Hard Disk Power Down Mode [Disabled]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **Hard Disk Power Down Mode** option specifies in what system mode the hard disk device can be turned off.

- ➔ **Disabled** (Default) The hard disk cannot be turned off in the Suspend or Standby mode

➔ **Standby** The hard disk can be turned off in the Standby mode

➔ **Suspend** The hard disk can be turned off in the Suspend mode

➔ **Standby Time Out (Minute) [Disabled]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **Standby Time Out (Minute)** option specifies what length of time without activity on certain components will place those components in a standby state. The options are:

- Disabled (Default)
- 1 Min
- 2 Min
- 4 Min
- 8 Min
- 10 Min
- 20 Min
- 30 Min
- 40 Min
- 50 Min
- 60 Min

➔ **Suspend Time Out (Minute) [Disabled]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **Suspend Time Out (Minute)** option specifies what length of time without activity on certain components will place those components in a suspended state. The options are:

- Disabled (Default)
- 1 Min
- 2 Min
- 4 Min
- 8 Min
- 10 Min
- 20 Min

- 30 Min
- 40 Min
- 50 Min
- 60 Min

➔ **Throttle Slow Clock Ratio [50%]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **Throttle Slow Clock Ratio** option allows the BIOS to throttle the CPU clock to reduce power consumption. For example, a throttle ratio of 50% means the BIOS throttles back the CPU clock to operate at 50% of its normal operational time. Throttle slow clock ratio options are:

- 87.5%
- 75%
- 62.5%
- 50% (Default)
- 37.5%
- 25%
- 12.5%

➔ **FDC/LPT/COM Ports [Monitor]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **FDC/LPT/COM Ports** option enables monitoring of activity on the FDC/LPT/COM ports and rouses the system from a sleep or suspend state.

➔ **Ignore** The system does not monitor the FDC/LPT/COM ports and does not rouse the system from a sleep or suspend state when an IRQ is detected.

➔ **Monitor** (Default) The system monitors the FDC/LPT/COM ports and rouses the system from a sleep or suspend state when an IRQ is detected.

➔ **MIDI Ports [Ignore]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **MIDI Ports** option enables monitoring of activity on the MIDI ports and rouses the system from a sleep or suspend state.

➔ **Ignore**	(Default)	The system does not monitor the MIDI ports and does not rouse the system from a sleep or suspend state when an IRQ is detected.
➔ **Monitor**		The system monitors the MIDI ports and rouses the system from a sleep or suspend state when an IRQ is detected.

➔ **Primary Master IDE [Monitor]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **Primary Master IDE** option enables monitoring of activity of the primary master IDE device and rouses the system from a sleep or suspend state.

➔ **Ignore**		The system does not monitor the primary master IDE device and does not rouse the system from a sleep or suspend state when an IRQ is detected.
➔ **Monitor**	(Default)	The system monitors the primary master IDE device and rouses the system from a sleep or suspend state when an IRQ is detected.

➔ **Primary Slave IDE [Ignore]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **Primary Slave IDE** option enables monitoring of activity of the primary slave IDE device and rouses the system from a sleep or suspend state.

➔ **Ignore** (Default) The system does not monitor the primary slave IDE device and does not rouse the system from a sleep or suspend state when an IRQ is detected.

➔ **Monitor** The system monitors the primary slave IDE device and rouses the system from a sleep or suspend state when an IRQ is detected.

➔ **Secondary Master IDE [Monitor]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **Secondary Master IDE** option enables monitoring of activity of the secondary master IDE device and rouses the system from a sleep or suspend state.

➔ **Ignore** The system does not monitor the secondary master IDE device and does not rouse the system from a sleep or suspend state when an IRQ is detected.

➔ **Monitor** (Default) The system monitors the secondary master IDE device and rouses the system from a sleep or suspend state when an IRQ is detected.

➔ **Secondary Slave IDE [Ignore]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **Secondary Slave IDE** option enables monitoring of activity of the secondary slave IDE device and rouses the system from a sleep or suspend state.

➔ **Ignore** (Default) The system does not monitor the secondary slave IDE device and does not rouse the system from a sleep or suspend state when an IRQ is detected.

➔ **Monitor** The system monitors the secondary slave IDE device and rouses the system from a sleep or suspend state when an IRQ is detected.

➔ **System Thermal [Disabled]**

The **System Thermal** option enables the manual setting of the **Thermal Active Temperature** and the **Thermal Slow Clock Ratio** options.

➔ **Disabled** (Default) **Thermal Active Temperature** and **Thermal Slow Clock Ratio** options cannot be set manually.

➔ **Enabled** **Thermal Active Temperature** and **Thermal Slow Clock Ratio** options can be set manually.

➔ **Thermal Active Temperature [65°C/149°F]**

The **Thermal Active Temperature** option can only be configured if the **System Thermal** option is enabled. The **Thermal Active Temperature** option has the following settings:

- 40°C/104°F
- 45°C/113°F
- 50°C/122°F
- 55°C/131°F
- 60°C/140°F
- 65°C/149°F (Default)
- 70°C/158°F
- 75°C/167°F

➔ **Thermal Slow Clock Ratio [50%]**

The **Thermal Slow Clock Ratio** option can only be configured if the **System Thermal** option is enabled. The **Thermal Slow Clock Ratio** option lowers power consumption and reduces thermals. For example, a **Thermal Slow Clock Ratio** of 50% means the BIOS

throttles back the CPU clock to operate at 50% of its normal operational time. The thermal throttle ratios are:

- 87.5%
- 75%
- 62.5%
- 50% (Default)
- 37.5%
- 25%
- 12.5%

➔ **Resume On Ring [Disabled]**

The **Resume On Ring** option specifies if the system will be roused from a suspended or standby state when there is activity on the RI (ring in) modem line. That is, the system will be roused by an incoming call on a modem.

➔	**Disabled**	(Default)	Wake event not generated by an incoming call
➔	**Enabled**		Wake event generated by an incoming call

➔ **Resume On Lan [Disabled]**

The **Resume On Lan** option specifies if the system is roused from a suspended or standby state when there is activity on the LAN.

➔	**Disabled**	(Default)	Wake event not generated by LAN activity
➔	**Enabled**		Wake event generated by LAN activity

➔ **Resume On PME# [Disabled]**

The **Resume On PME#** option specifies if the system will be roused from a suspended or standby state when there is activity on the PCI PME (power management event) controller.

➔	**Disabled**	(Default)	Wake event not generated by PCI PME controller activity

➔ **Enabled** Wake event generated by PCI PME controller activity

➔ **Resume On RTC Alarm [Disabled]**

The **Resume On RTC Alarm** option determines when the computer will be roused from a suspended state.

➔ **Disabled** (Default) The real time clock (RTC) cannot generate a wake event

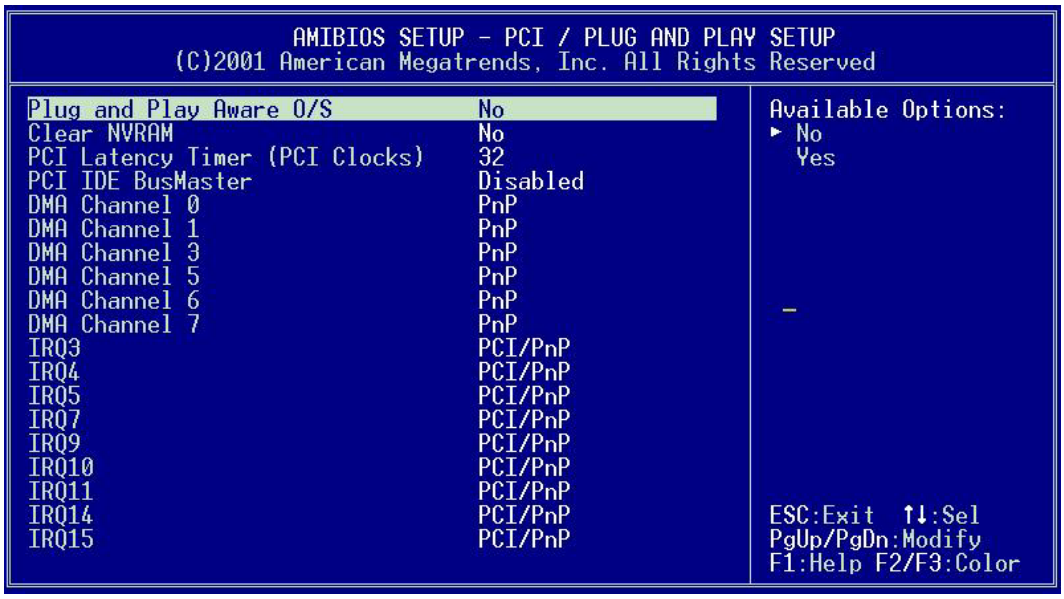
➔ **Enabled** If selected, the following will appear with values that can be selected:

- ➔ **RTC Alarm Date (Days)**
- ➔ **RTC Alarm Hour (Hours)**
- ➔ **RTC Alarm Minute (Minutes)**
- ➔ **RTC Alarm Second (Seconds)**

After setting the alarm, the computer will turn itself on from a suspend state when the alarm goes off.

5.6 PCI / Plug and Play Setup

The **PCI / Plug and Play Setup** menu (**BIOS Menu 6**) sets the PCI and plug and play options.



BIOS Menu 6: PCI / Plug and Play Setup Menu

➔ **Plug and Play Aware O/S [No]**

The **Plug and Play Aware O/S** option determines whether the Plug and Play devices connected to the system are configured by the operating system or the BIOS.

➔ No (Default) If the operating system does not meet the Plug and Play specifications, this option allows the BIOS to configure all the devices in the system.

➔ Yes This setting allows the operating system to change the interrupt, I/O, and DMA settings. Set this option if the system is running Plug and Play aware operating systems.

➔ **Clear NVRAM [No]**

The **Clear NVRAM** option specifies whether the contents of the NVRAM (Non-Volatile RAM) is cleared when the power is turned off.

➔	**No**	(Default)	System does not clear NVRAM during system boot
➔	**Yes**		System clears NVRAM during system boot

➔ **PCI Latency Timer [32]**

The values stipulated in the **PCI Latency Timer** are in units of PCI clock cycles for the PCI device latency timer register. Options are:

- 32 (Default)
- 64
- 96
- 128
- 160
- 192
- 224
- 248

➔ **PCI IDE BusMaster [Disabled]**

The **PCI IDE BusMaster** option enables or prevents the use of PCI IDE busmastering.

➔	**Disabled**	(Default)	Busmastering is prevented
➔	**No**		IDE controller on the PCI local bus has mastering capabilities

➔ **DMA Channel# [PnP]**

➔	**PnP**	(Default)	The specified DMA is available to be used by PCI/PnP devices

➔ **ISA/EISA** The specified DMA is reserved for use by Legacy ISA devices

Available DMA Channels are:

- DMA Channel 0
- DMA Channel 1
- DMA Channel 3
- DMA Channel 5
- DMA Channel 6
- DMA Channel 7

➔ **IRQ# [PCI/PnP]**

➔ **PCI/PnP** (Default) The specified IRQ is available to be used by PCI/PnP devices

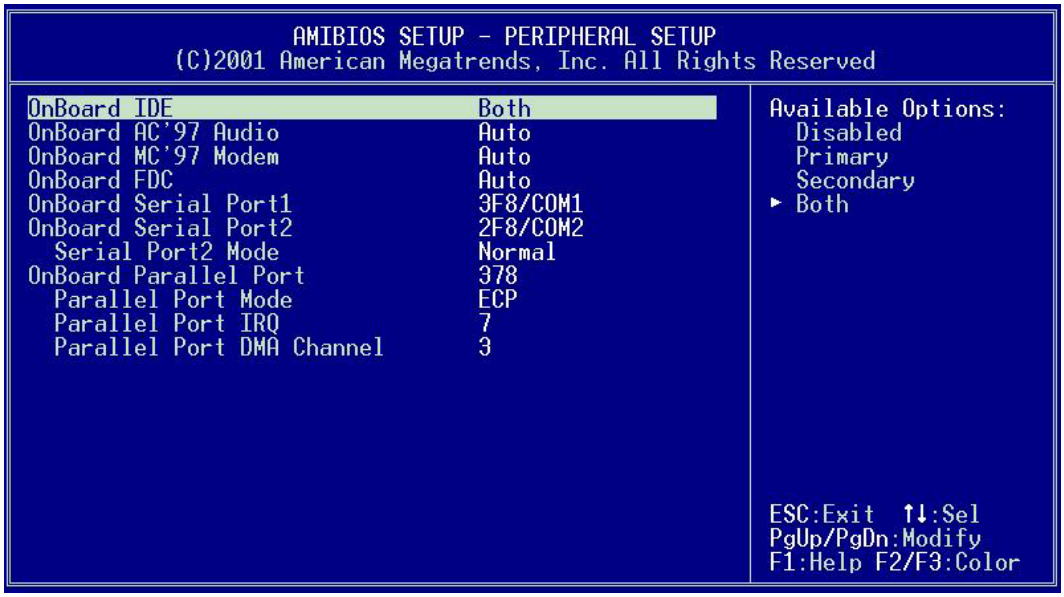
➔ **ISA/EISA** The specified IRQ is reserved for use by Legacy ISA/EISA devices

Available IRQ addresses are:

- IRQ3
- IRQ4
- IRQ5
- IRQ7
- IRQ9
- IRQ10
- IRQ 11
- IRQ 14
- IRQ 15

5.7 Peripheral Setup

The **Peripheral Setup** menu (**BIOS Menu 7**) sets the PCI and plug and play options.



BIOS Menu 7: Peripheral Setup Menu

➔ **OnBoard IDE [Both]**

The **OnBoard IDE** option specifies the IDE channels used by the onboard PCI IDE controller.

➔ **Disabled** Prevents the system from using the onboard IDE controller

➔ **Primary** Only allows the system to detect the Primary IDE channel, including both the Primary Master and Primary Slave

➔ **Secondary** Only allows the system to detect the Secondary IDE channel, including both the Secondary Master and Secondary Slave

➔ **Both** (Default) Allows the system to detect both the Primary and Secondary IDE channels including the Primary Master, Primary Slave, Secondary Master and Secondary Slave.

➔ **OnBoard AC'97 Audio [Disabled]**

The **OnBoard AC'97 Audio** option enables or disables the AC'97 CODEC.

➔ **Disabled** The onboard AC'97 is disabled

➔ **Auto** (Default) The onboard AC'97 automatically detected and enabled

➔ **OnBoard MC'97 Modem [Disabled]**

The **OnBoard MC'97 Audio** enables or disables the MC'97 modem controller.

➔ **Disabled** The onboard MC'97 modem controller is disabled

➔ **Auto** (Default) The onboard MC'97 modem controller is detected and enabled

➔ **OnBoard FDC [Auto]**

The **OnBoard FDC** option enables or disables the floppy controller.

➔ **Disabled** Allows BIOS to disable the floppy controller

➔ **Enabled** Allows BIOS to enable the floppy controller

➔ **Auto** (Default) The onboard floppy controller is detected and enabled

➔ **OnBoard Serial Port1 [3F8/COM1]**

The **OnBoard Serial Port1** option allows BIOS to select the Serial Port 1 base address.

➔ **Disabled** No base address is assigned to Serial Port 1

- ➔ **3F8/COM1** (Default) Serial Port 1 I/O port address is 3F8 and the interrupt address is IRQ4
- ➔ **2F8/COM2** Serial Port 1 I/O port address is 2F8 and the interrupt address is IRQ3
- ➔ **3E8/COM3** Serial Port 1 I/O port address is 3E8 and the interrupt address is IRQ4
- ➔ **2E8/COM4** Serial Port 1 I/O port address is 2E8 and the interrupt address is IRQ3

➔ **OnBoard Serial Port2 [2F8/COM2]**

The **OnBoard Serial Port2** option allows BIOS to select the Serial Port 1 base address.

- ➔ **Disabled** No base address is assigned to Serial Port 1
- ➔ **3F8/COM1** Serial Port 1 I/O port address is 3F8 and the interrupt address is IRQ4
- ➔ **2F8/COM2** (Default) Serial Port 1 I/O port address is 2F8 and the interrupt address is IRQ3
- ➔ **3E8/COM3** Serial Port 1 I/O port address is 3E8 and the interrupt address is IRQ4
- ➔ **2E8/COM4** Serial Port 1 I/O port address is 2E8 and the interrupt address is IRQ3

➔ **Serial Port2 Mode [Normal]**

The **Serial Port2 Mode** is configurable when the **OnBoard Serial Port2** option is not disabled. The **Serial Port2 Mode** selects the mode for Serial Port 2.

- ➔ **Normal** (Default) Serial Port 2 mode is normal

- **IrDA** Serial Port 2 mode is IrDA
- **ASK IR** Serial Port 2 mode is ASK IR

➔ **OnBoard Parallel Port [378]**

The **OnBoard Parallel Port** option assigns the I/O port address of the parallel port. The following address options are available:

- **Auto** Parallel Port I/O port address is automatically set
- **Disabled** No I/O port address is assigned to the parallel port
- **378** (Default) Parallel Port I/O port address is 378
- **278** Parallel Port I/O port address is 278
- **3BC** Parallel Port I/O port address is 3BC

➔ **Parallel Port Mode [ECP]**

The **Parallel Port Mode** option is configurable when the **OnBoard Parallel Port** option is not disabled. The **Parallel Port Mode** option selects the mode the parallel port operates in.

- **Normal** The normal parallel port mode is the standard mode for parallel port operation.
- **EPP** The parallel port operates in the enhanced parallel port mode (EPP). The EPP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode.
- **Bi-Directional** Bi-Directional parallel port is able to receive 8 lines of data into the computer.

➔ **ECP** (Default) The parallel port operates in the extended capabilities port (ECP) mode. The ECP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the SPP mode.

➔ **ECP+EPP** The parallel port operates in the extended capabilities port (ECP) mode. The ECP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode. The parallel port also becomes compatible with EPP devices described above.

➔ **Parallel Port IRQ [IRQ7]**

The **Parallel Port IRQ** option is configurable when the **OnBoard Parallel Port** option is not disabled and when **ECP** or **EPP+ECP** is selected in the **Parallel Port Mode** option. The **Parallel Port IRQ** option assigns the parallel port interrupt address. The following address options are available.

➔ **IRQ5** Parallel port interrupt address is IRQ5

➔ **IRQ7** (Default) Parallel port interrupt address is IRQ7

➔ **Parallel Port DMA Channel [3]**

The **Parallel Port DMA Channel** option is configurable when the **OnBoard Parallel Port** option is not disabled and when **ECP** or **EPP+ECP** is selected in the **Parallel Port Mode** option. The **Parallel Port DMA Channel** option determines the DMA channel the parallel port uses when in ECP mode.

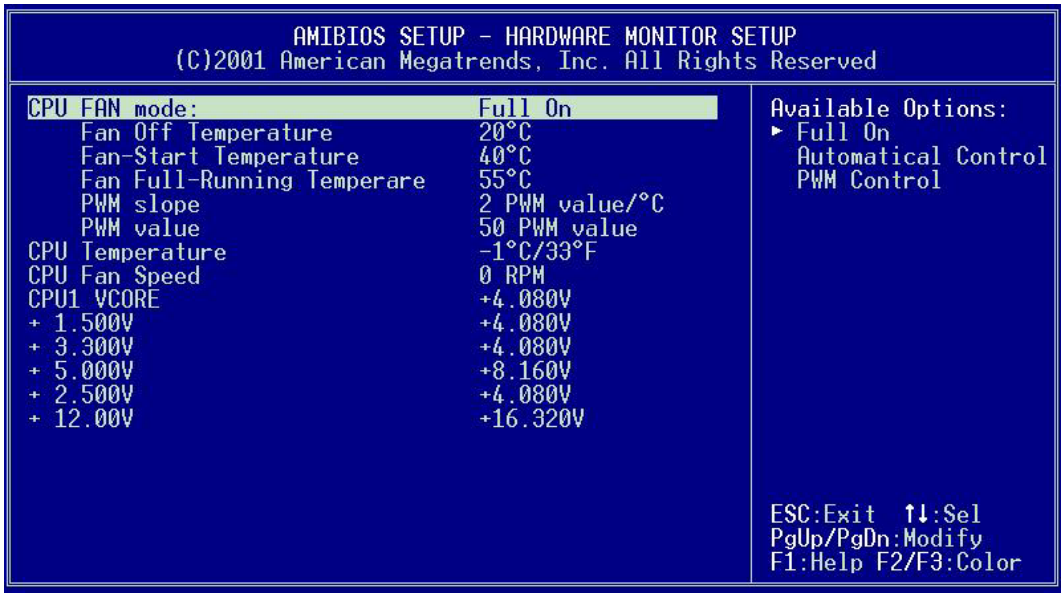
➔ **0** Parallel port uses DMA Channel 0 in ECP or EPP+ECP mode

➔ **1** Parallel port uses DMA Channel 1 in ECP or EPP+ECP mode

➔ **3** (Default) Parallel port uses DMA Channel 3 in ECP or EPP+ECP mode

5.8 Hardware Monitor Setup

The **Hardware Monitor Setup** menu (**BIOS Menu 8**) sets the hardware monitor options.



BIOS Menu 8: Hardware Monitor Setup Menu

➔ **CPU FAN Mode: [Full On]**

The **CPU FAN Mode** has the following options:

➔ **Full On** (Default)

➔ **Automatic Control** If selected, the following will appear with values that can be selected:

➔ **Fan Off Temperature**: Always Start, 15ºC, 20ºC (Default) or 25ºC

➔ **Fan-Start Temperature**: 30ºC, 35ºC, 40ºC (Default) or 45ºC

➔ **Fan-Full Running Temperature**: 50ºC, 55ºC (Default), 60ºC or 65ºC

➔ **PWM slope**: 0 PWM value/ºC, 2 PWM value/ºC (Default), 4 PWM value/ºC or 8 PWM value/ºC

➔ **PWM Value**: 40 PWM Value, 50 PWM Value (Default), 60 PWM Value, 70 PWM Value or 80 PWM Value

➔ **PWM Control** If selected, the following will appear with values that can be selected:

➔ **PWM Value**: 40 PWM Value, 50 PWM Value (Default), 60 PWM Value, 70 PWM Value or 80 PWM Value

The **Hardware Monitor Setup** menu (**BIOS Menu 8**) also has the following non-configurable options:

- CPU Temperature
- CPU Fan Speed
- CPU1 VCORE
- + 1.500V
- + 3.300V
- + 5.000V
- + 2.500V
- + 12.00V

5.9 Auto-Detect Hard Disks

The **Auto-Detect Hard Disks** menu option will automatically detect any disks connected to the system and display the results in the **Standard CMOS Setup** menu (**BIOS Menu 2**).

Chapter

6

Software Drivers

6.1 Available Software Drivers

NOTE:

The content of the CD may vary throughout the life cycle of the product and is subject to change without prior notice. Visit the IEI website or contact technical support for the latest updates.

The PCISA-8450 CPU card has six software drivers:

- Intel® Chipset Software Installation Utility
- Intel® Application Accelerator
- Intel® Graphics Media Accelerator
- Realtek LAN Driver (for GbE LAN)
- Realtek AC'97 Codec (ALC655)
- ALi SATA/RAID Controller (M5281/M5283)

All six drivers can be found on the CD that came with the CPU card. To install the drivers please follow these instructions:

6.2 Chipset Driver Installation

To install the chipset driver, please follow the steps below.

Step 1: Insert the CD into the system that contains the PCISA-8450. Open the **X:\1-INF** directory (where **X:** is the system CD drive) and double-click the **infinst_autol.exe** installation file to begin extracting files (**Figure 6-1**).

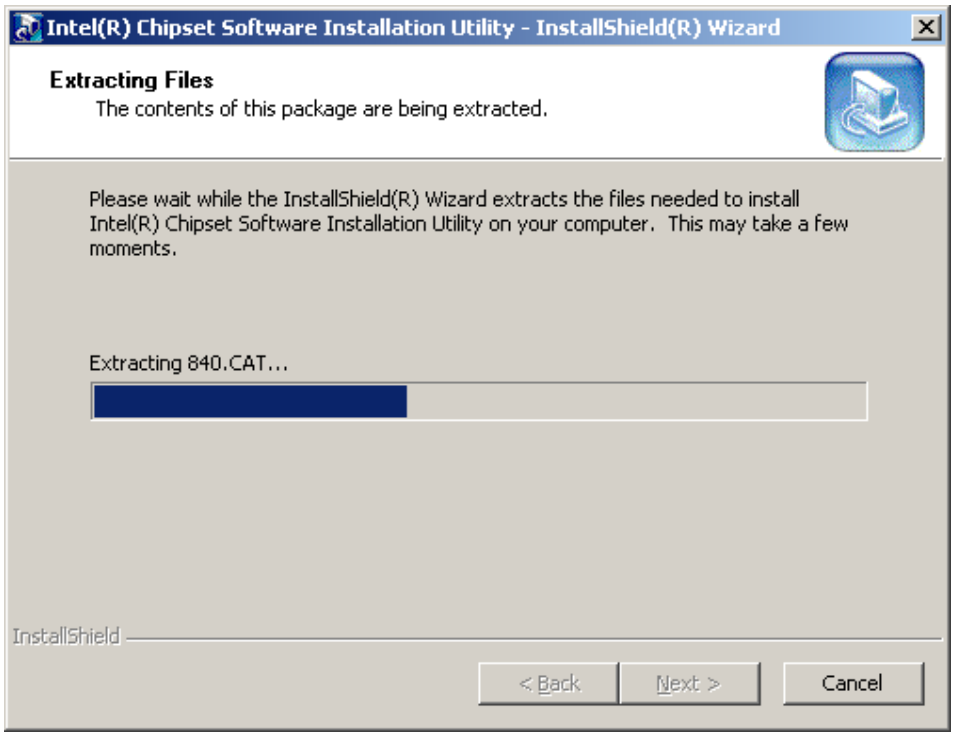

Intel(R) Chipset Software Installation Utility - InstallShield(R) Wizard
Extracting Files
The contents of this package are being extracted.
Please wait while the InstallShield(R) Wizard extracts the files needed to install Intel(R) Chipset Software Installation Utility on your computer. This may take a few moments.
Extracting 840.CAT...
InstallShield
< Back
Next >
Cancel

Figure 6-1: Chipset Software Installation Utility Extracting Files

Step 2: The **Chipset Software Installation Utility** prepares the **InstallShield Wizard** (**Figure 6-2**).

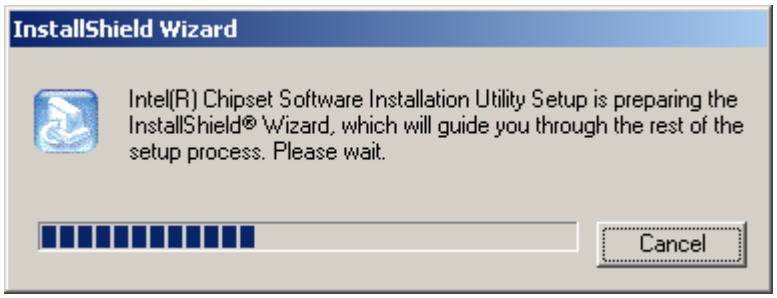

InstallShield Wizard
Intel(R) Chipset Software Installation Utility Setup is preparing the InstallShield® Wizard, which will guide you through the rest of the setup process. Please wait.
Cancel

Figure 6-2: InstallShield Wizard Preparation Screen

Step 3: The **InstallShield Wizard Welcome** screen appears (**Figure 6-3**).

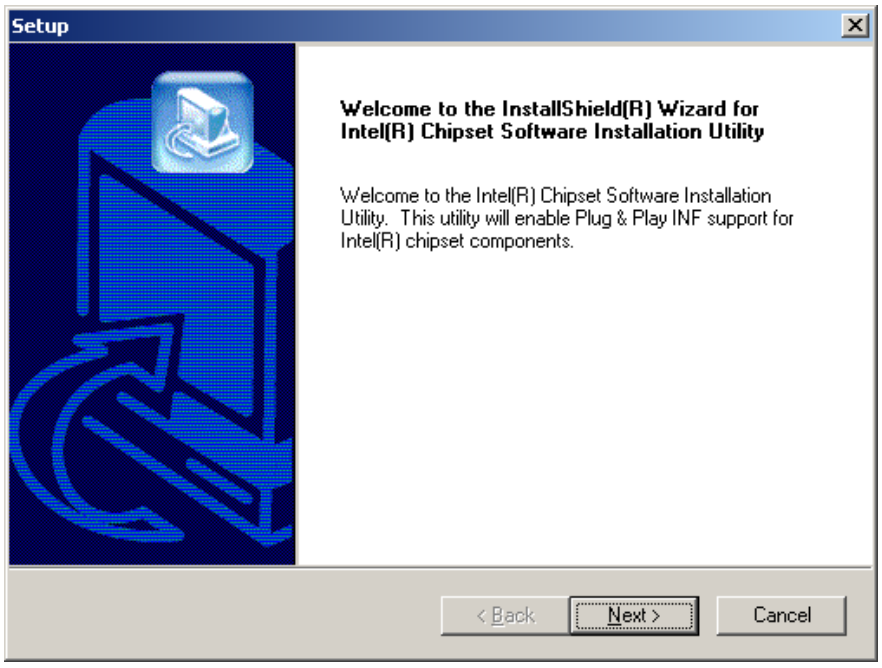

Setup
Welcome to the InstallShield(R) Wizard for Intel(R) Chipset Software Installation Utility
Welcome to the Intel(R) Chipset Software Installation Utility. This utility will enable Plug & Play INF support for Intel(R) chipset components.
< Back
Next >
Cancel

Figure 6-3: Chipset Software Installation Utility Welcome Screen

Step 4: Click **NEXT** and the license agreement appears (**Figure 6-4**).

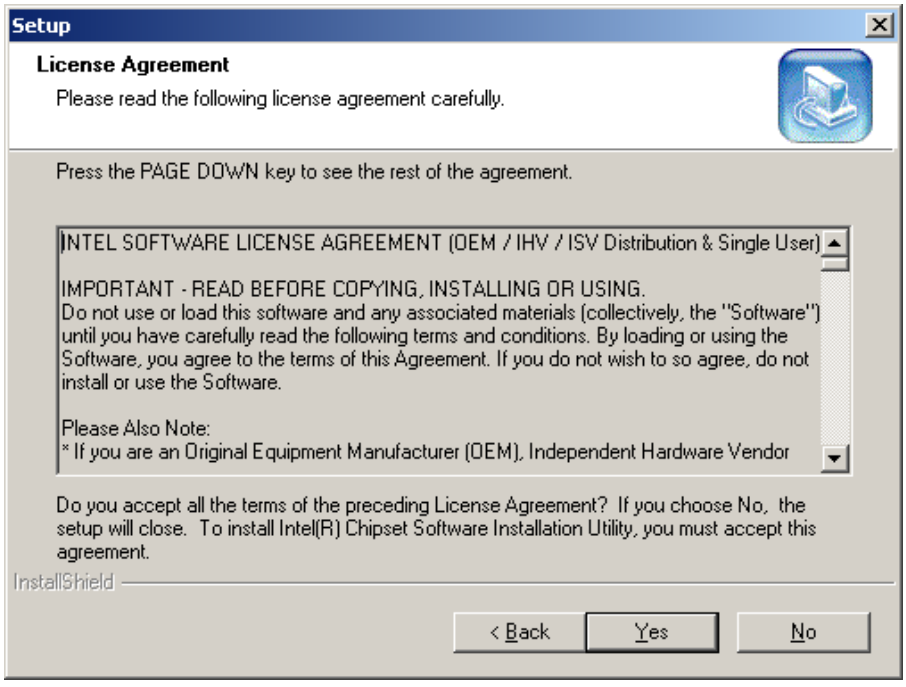

Setup
License Agreement
Please read the following license agreement carefully.
Press the PAGE DOWN key to see the rest of the agreement.
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor
Do you accept all the terms of the preceding License Agreement? If you choose No, the setup will close. To install Intel(R) Chipset Software Installation Utility, you must accept this agreement.
InstallShield
< Back
Yes
No

Figure 6-4: Chipset Software Installation Utility License Agreement

Step 5: Read the license agreement (**Figure 6-4**). To accept the terms and conditions stipulated in the agreement, click **YES** and the Readme file information appears (**Figure 6-5**).

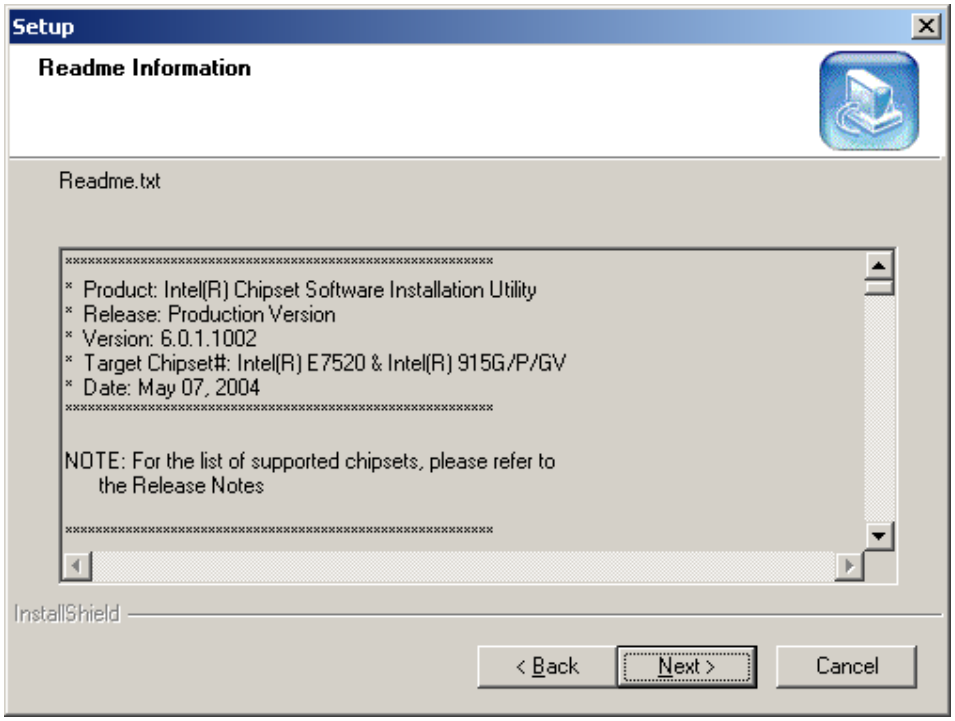


Figure 6-5: Chipset Software Installation Utility Readme File Information

Step 6: Read the Readme file information (**Figure 6-5**). Click **NEXT** and the chipset driver is installed (**Figure 6-6**).

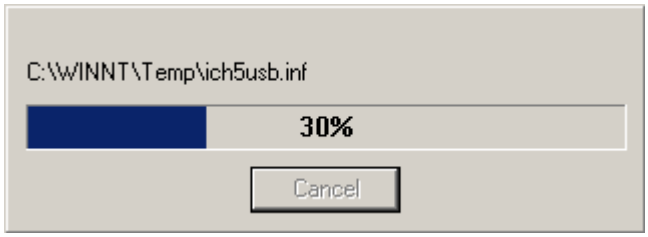


Figure 6-6: Installing Chipset Driver

Step 7: After the driver installation process is complete, a confirmation screen appears (**Figure 6-7**).

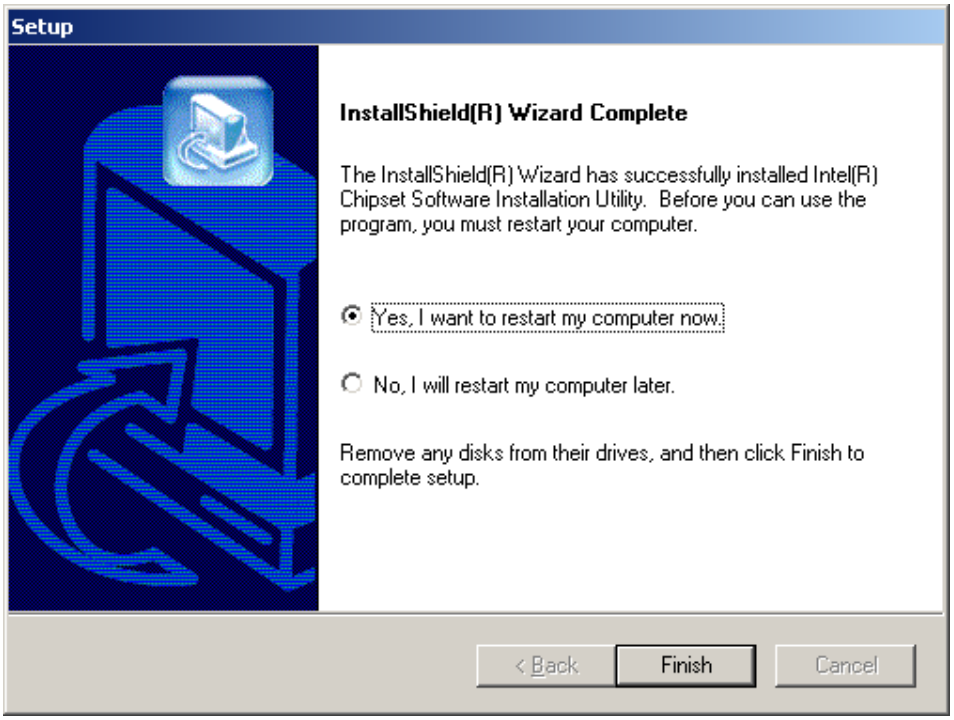

Setup
InstallShield(R) Wizard Complete
The InstallShield(R) Wizard has successfully installed Intel(R) Chipset Software Installation Utility. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

Figure 6-7: Chipset Software Installation Utility Complete

Step 8: The confirmation screen (**Figure 6-7**) offers the option of restarting the computer now or later. For the settings to take effect, the computer must be restarted. Click **FINISH** to restart the computer.

6.3 Intel® Application Accelerator Installation

The Intel® Application Accelerator is a performance software package that provides:

- Faster boot time via accelerated operating system load time
- Accelerated disk I/O for games, graphics applications, disk utilities, and media authoring applications
- Performance-enhancing data pre-fetcher for Intel® Pentium® 4 processor-based systems
- Support for 137GB and larger hard drives

To install the Intel® Application Accelerator, please follow the steps below.

Step 1: Insert the CD into the system that contains the PCISA-8450. Open the **X:\1-INF\Performance software** directory (where **X:** is the system CD drive).

Step 2: Open the Readme file contained in the directory and follow the instructions for installing the driver.

6.4 Intel® Graphics Media Accelerator Driver

To install the Intel® Graphics Media Accelerator driver, please follow the steps below.

Step 1: Insert the CD into the system that contains the PCISA-8450. Open the **X:\2-VGA\???** directory (where **X:** is the system CD drive and **???** is the appropriate operating system) and double-click the corresponding **.exe** installation file to view the **Intel® Chipset Graphics Driver Software InstallShield Wizard** readme.txt file (**Figure 6-8**).

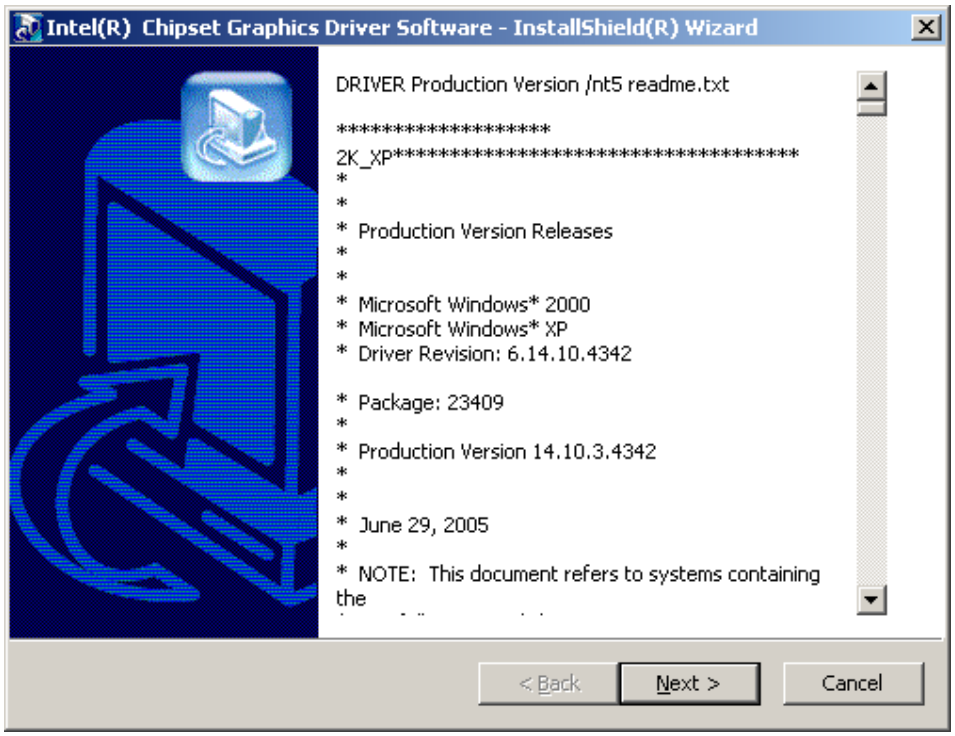


Figure 6-8: Intel® Chipset Graphics Driver Software InstallShield Wizard

Step 2: Read the Readme file information. Click **NEXT** to begin extracting files (**Figure 6-9**).

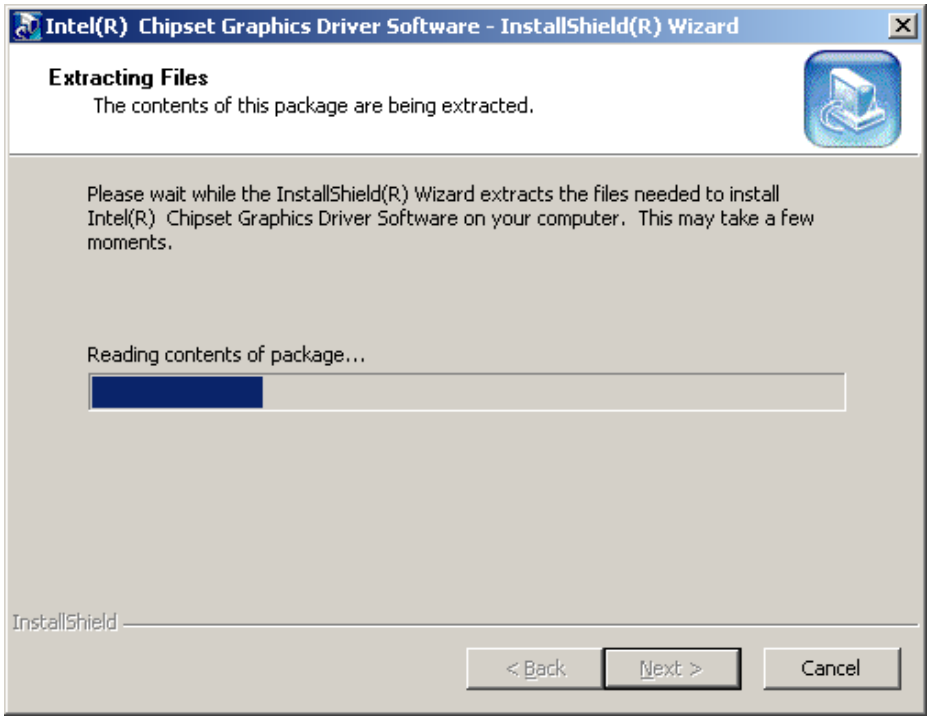

Intel(R) Chipset Graphics Driver Software - InstallShield(R) Wizard
Extracting Files
The contents of this package are being extracted.
Please wait while the InstallShield(R) Wizard extracts the files needed to install Intel(R) Chipset Graphics Driver Software on your computer. This may take a few moments.
Reading contents of package...
InstallShield
< Back
Next >
Cancel

Figure 6-9: InstallShield Wizard Extracting Files

Step 3: The **InstallShield Wizard Welcome** screen appears (**Figure 6-10**).

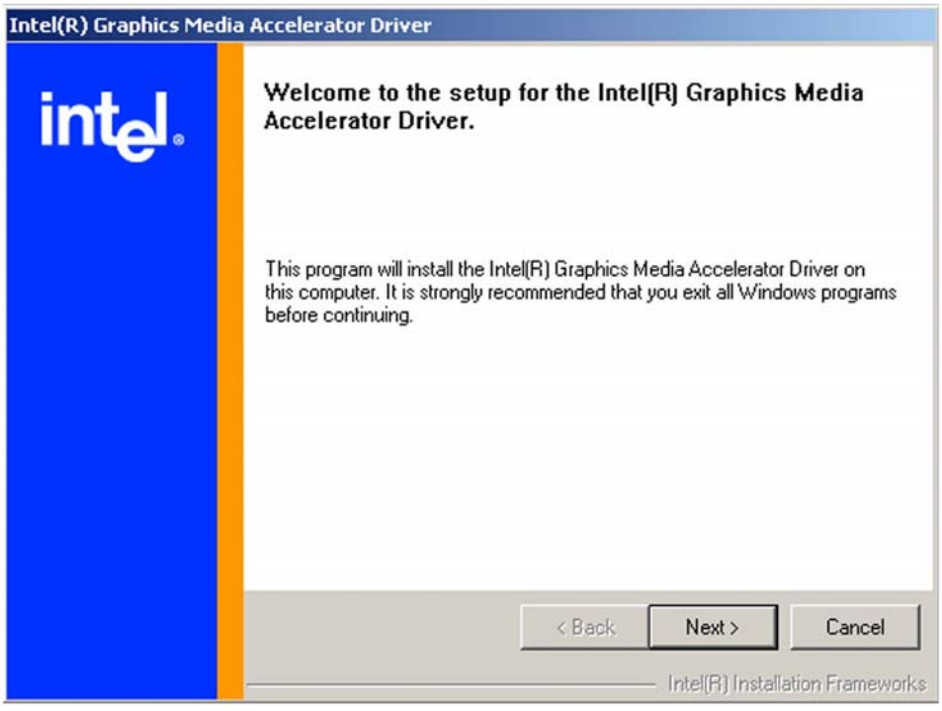

Intel(R) Graphics Media Accelerator Driver
intel
Welcome to the setup for the Intel(R) Graphics Media Accelerator Driver.
This program will install the Intel(R) Graphics Media Accelerator Driver on this computer. It is strongly recommended that you exit all Windows programs before continuing.
< Back
Next >
Cancel
Intel(R) Installation Frameworks

Figure 6-10: Intel® Graphics Media Accelerator Driver Welcome Screen

Step 4: Click **NEXT** and a license agreement appears (**Figure 6-11**).

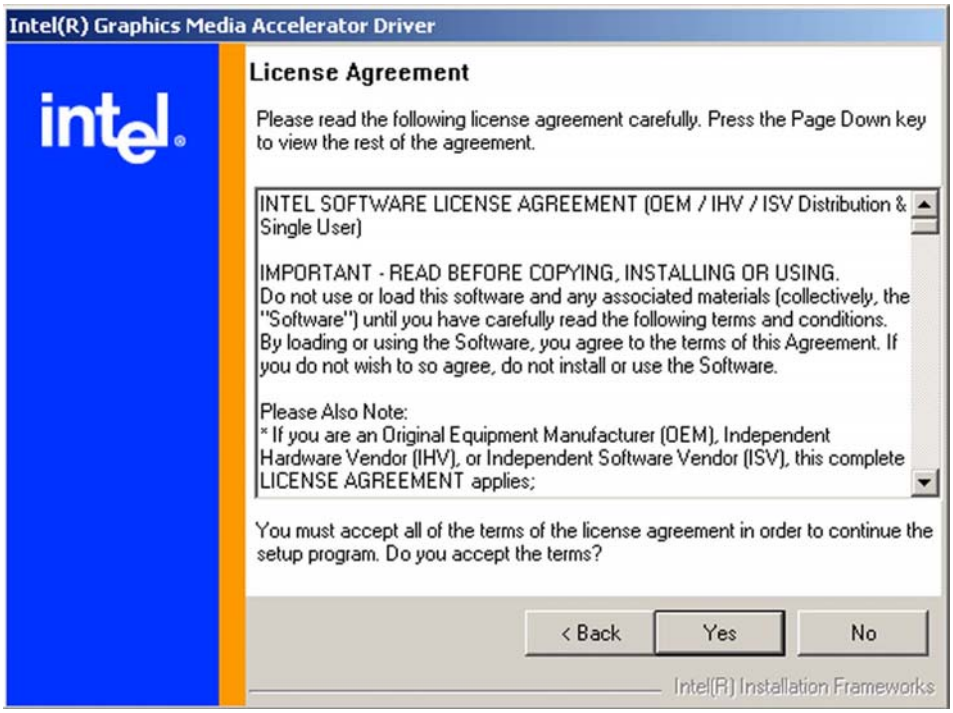

Intel(R) Graphics Media Accelerator Driver
intel
License Agreement
Please read the following license agreement carefully. Press the Page Down key to view the rest of the agreement.
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
< Back
Yes
No
Intel(R) Installation Frameworks

Figure 6-11: Intel® Graphics Media Accelerator Driver License Agreement

Step 5: Read the license agreement. To accept the terms and conditions stipulated in the license agreement shown, click **YES** and the installation notice appears (**Figure 6-12**).

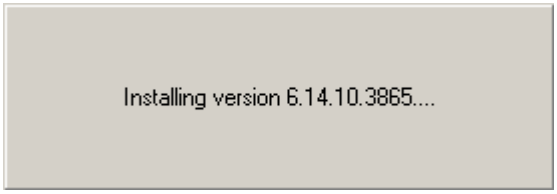


Figure 6-12: Intel® Graphics Media Accelerator Driver Installing Notice

Step 6: After the driver installation process is complete, a confirmation screen appears (**Figure 6-13**).

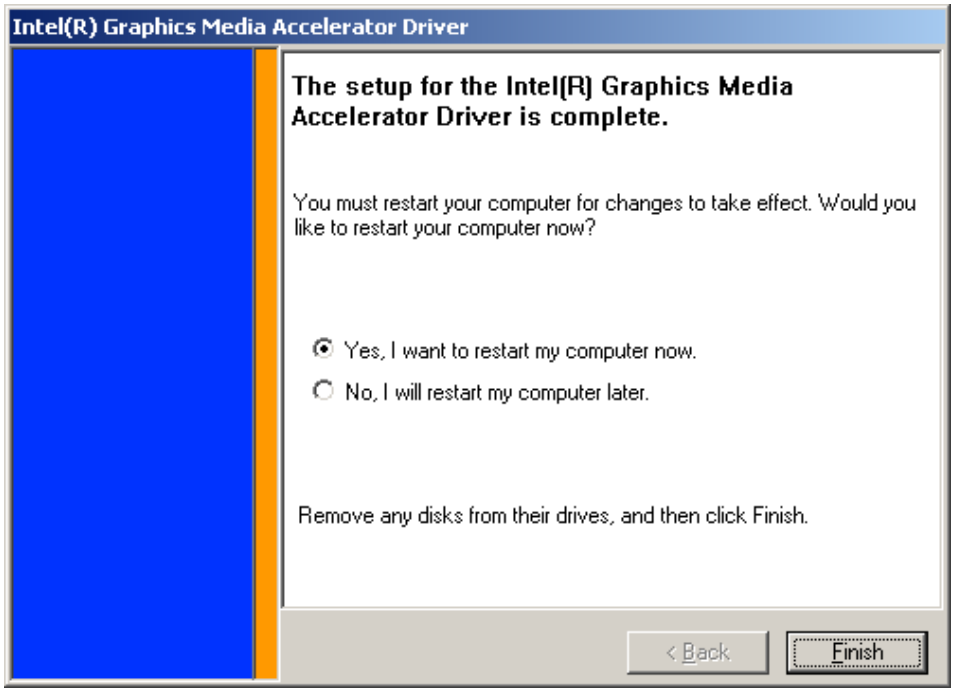

Intel(R) Graphics Media Accelerator Driver
The setup for the Intel(R) Graphics Media Accelerator Driver is complete.
You must restart your computer for changes to take effect. Would you like to restart your computer now?
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish.
< Back
Finish

Figure 6-13: Intel® Graphics Media Accelerator Installation Complete

Step 7: The confirmation screen offers the option of restarting the computer now or later. For the settings to take effect, the computer must be restarted. Click **FINISH** to restart the computer.

6.5 Realtek LAN Driver (for GbE LAN) Installation

To install the Realtek LAN driver, please follow the steps below.

Step 1: Insert the CD into the system that contains the PCISA-8450. Open the **X:\3-LAN\Realtek** directory (where **X:** is the system CD drive) and double-click the **setup.exe** installation file to initiate the **InstallShield Wizard** (**Figure 6-14**).

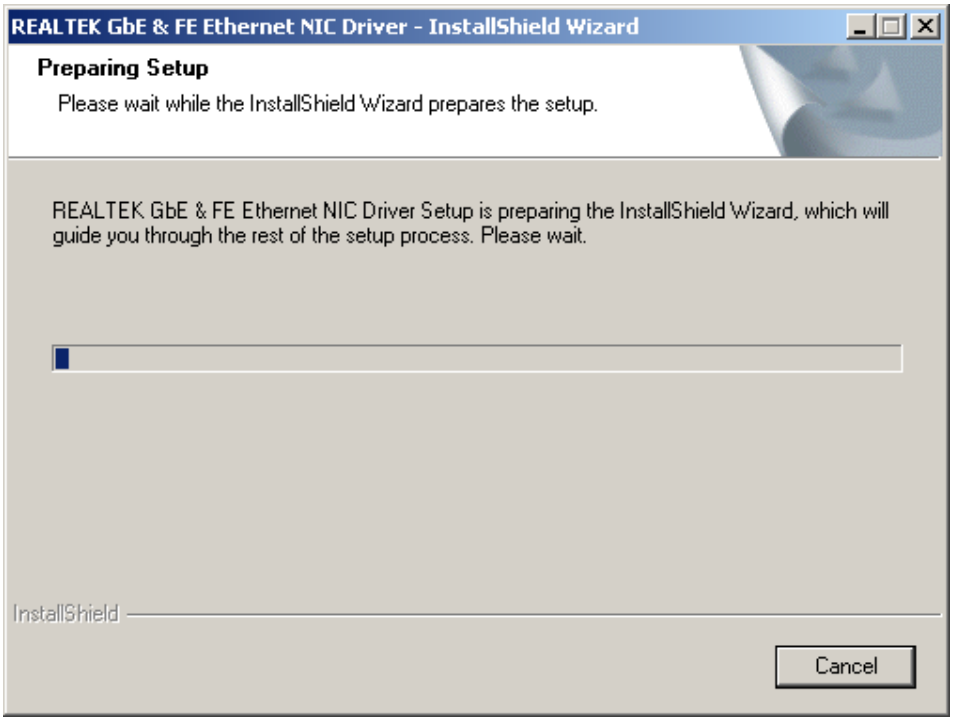

REALTEK GbE & FE Ethernet NIC Driver - InstallShield Wizard
Preparing Setup
Please wait while the InstallShield Wizard prepares the setup.
REALTEK GbE & FE Ethernet NIC Driver Setup is preparing the InstallShield Wizard, which will guide you through the rest of the setup process. Please wait.
InstallShield
Cancel

Figure 6-14: Realtek LAN Driver InstallShield Wizard

Step 2: The **InstallShield Wizard Welcome** screen appears (**Figure 6-15**).

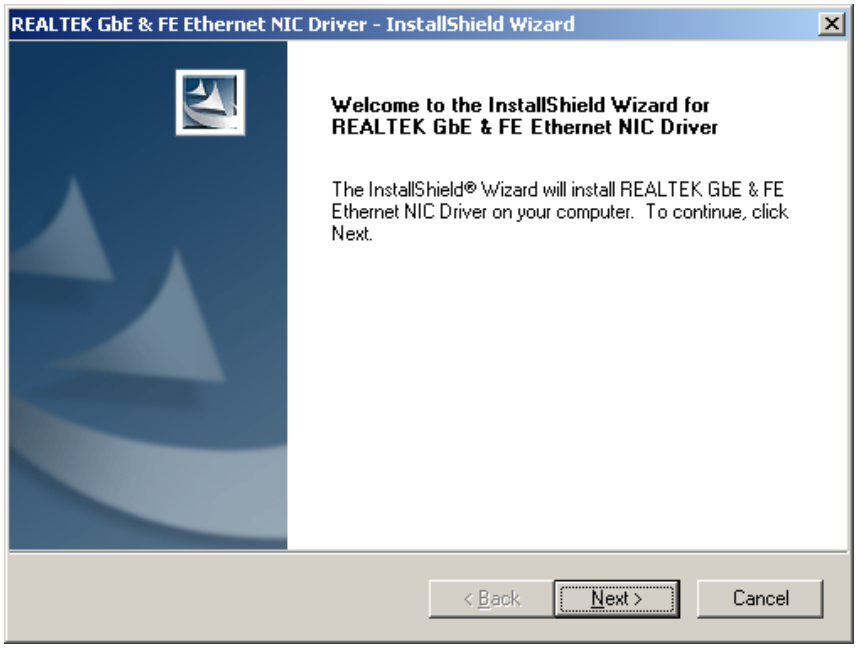

REALTEK GbE & FE Ethernet NIC Driver - InstallShield Wizard
Welcome to the InstallShield Wizard for REALTEK GbE & FE Ethernet NIC Driver
The InstallShield® Wizard will install REALTEK GbE & FE Ethernet NIC Driver on your computer. To continue, click Next.
< Back
Next >
Cancel

Figure 6-15: Realtek LAN Driver Welcome

Step 3: Click **NEXT** and the **Ready to Install** screen appears (**Figure 6-16**).

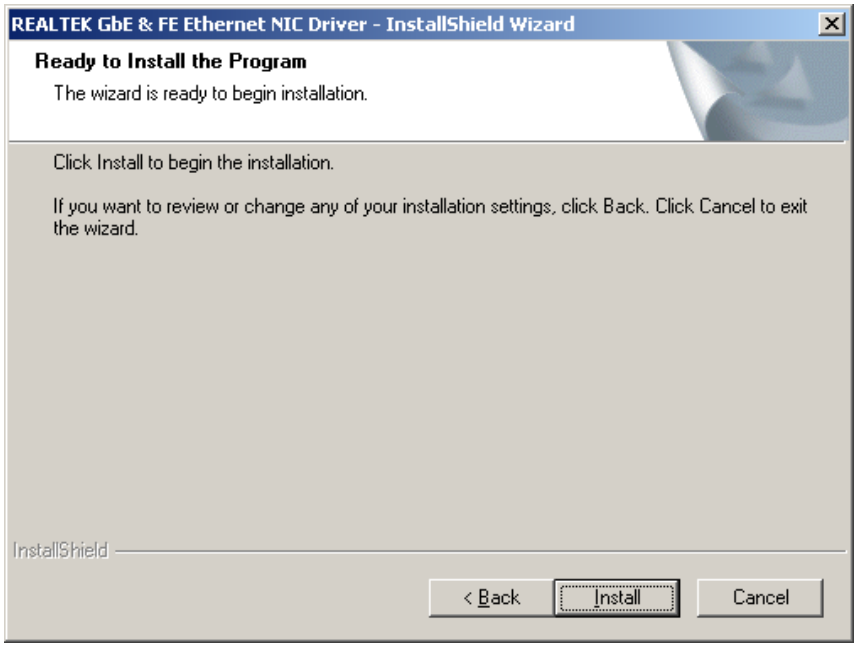

REALTEK GbE & FE Ethernet NIC Driver - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

Figure 6-16: Realtek LAN Driver Ready to Install

Step 4: Click **INSTALL** and the **Setup Status** screen appears as the driver is installed (**Figure 6-17**).

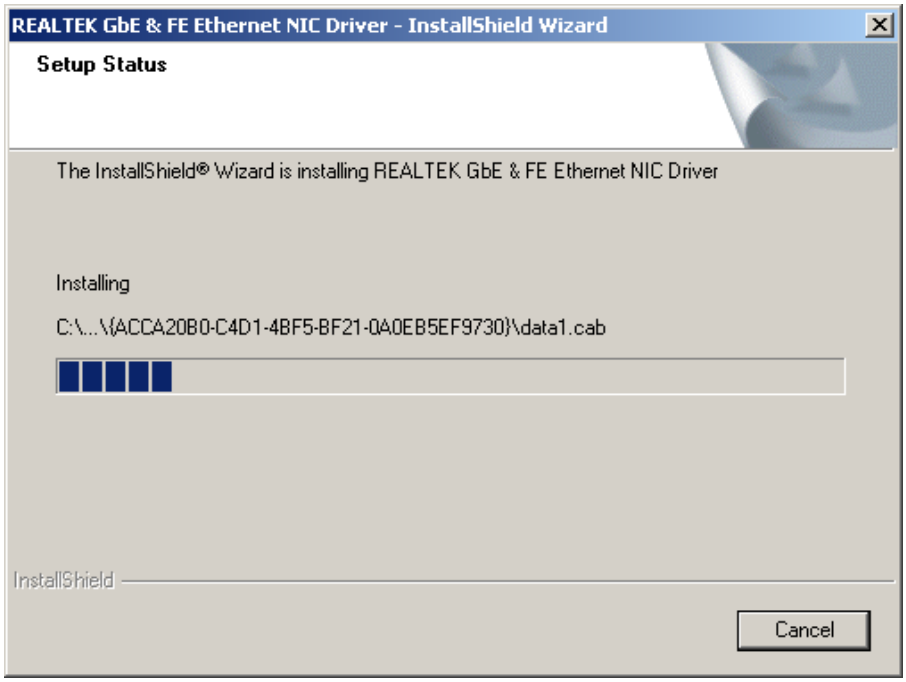

REALTEK GbE & FE Ethernet NIC Driver - InstallShield Wizard
Setup Status
The InstallShield® Wizard is installing REALTEK GbE & FE Ethernet NIC Driver
Installing
C:\...\{ACCA20B0-C4D1-4BF5-BF21-0A0EB5EF9730}\data1.cab
InstallShield
Cancel

Figure 6-17: Realtek LAN Driver Setup Status

Step 5: After the driver installation process is complete, a confirmation screen appears (**Figure 6-18**).

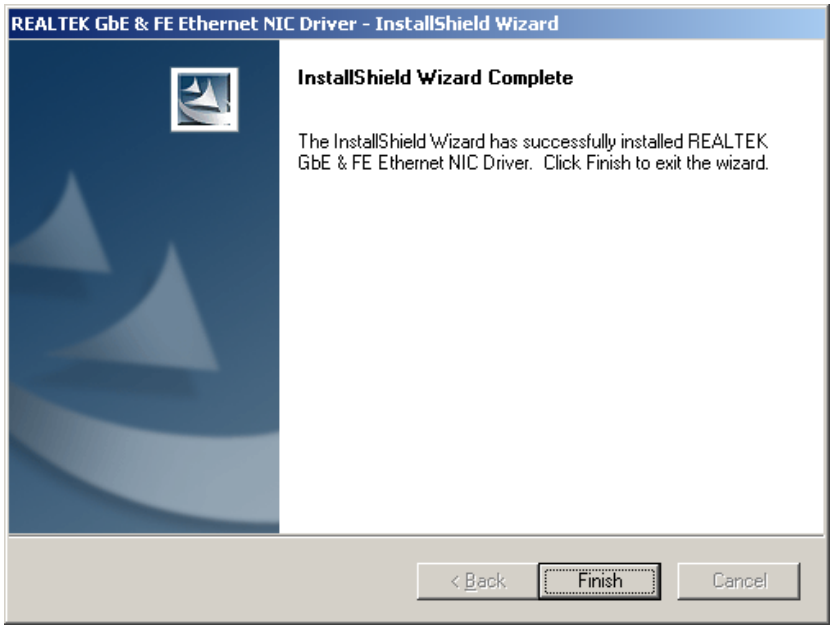

REALTEK GbE & FE Ethernet NIC Driver - InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed REALTEK GbE & FE Ethernet NIC Driver. Click Finish to exit the wizard.
< Back
Finish
Cancel

Figure 6-18: Realtek LAN Driver Installation Complete

Step 6: Click **FINISH** to exit the **InstallShield** wizard.

6.6 RealTek Audio Driver Installation

To install the Realtek Audio driver, please follow the steps below.

Step 1: Insert the CD into the system that contains the PCISA-8450. Open the **X:\4-Audio** directory (where **X:** is the system CD drive) and double-click the **WDM_A384.exe** installation file to begin extracting files (**Figure 6-19**).

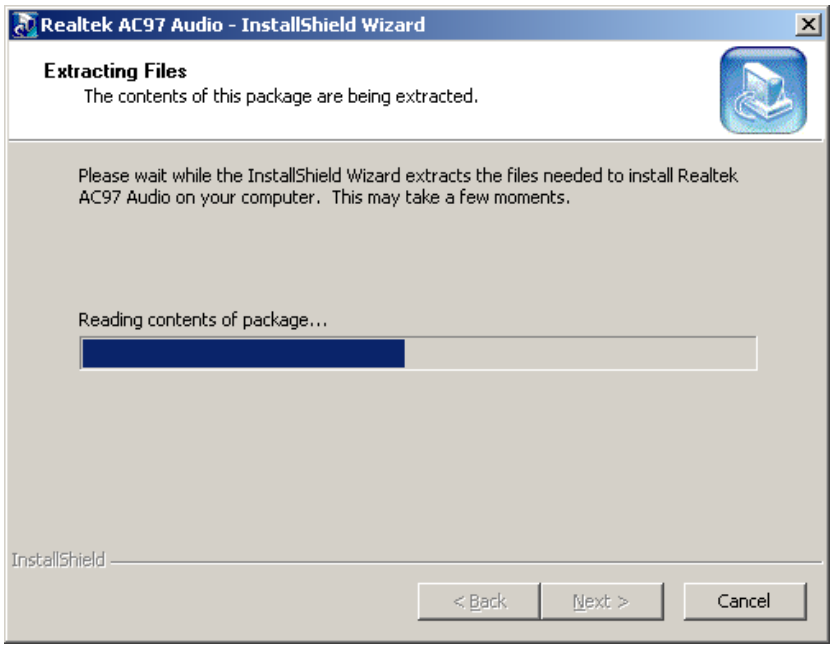

Realtek AC97 Audio - InstallShield Wizard
Extracting Files
The contents of this package are being extracted.
Please wait while the InstallShield Wizard extracts the files needed to install Realtek AC97 Audio on your computer. This may take a few moments.
Reading contents of package...
InstallShield
< Back
Next >
Cancel

Figure 6-19: InstallShield Wizard Extracting Files

Step 2: The **Realtek AC'97 Audio Setup** prepares the **InstallShield Wizard** (**Figure 6-20**).

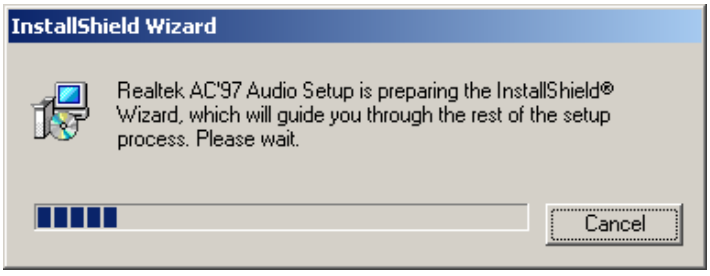

InstallShield Wizard
Realtek AC'97 Audio Setup is preparing the InstallShield® Wizard, which will guide you through the rest of the setup process. Please wait.
Cancel

Figure 6-20: Audio Driver Install Shield Wizard Starting

Step 3: The **Setup Status** screen appears as the driver is installed (**Figure 6-21**).

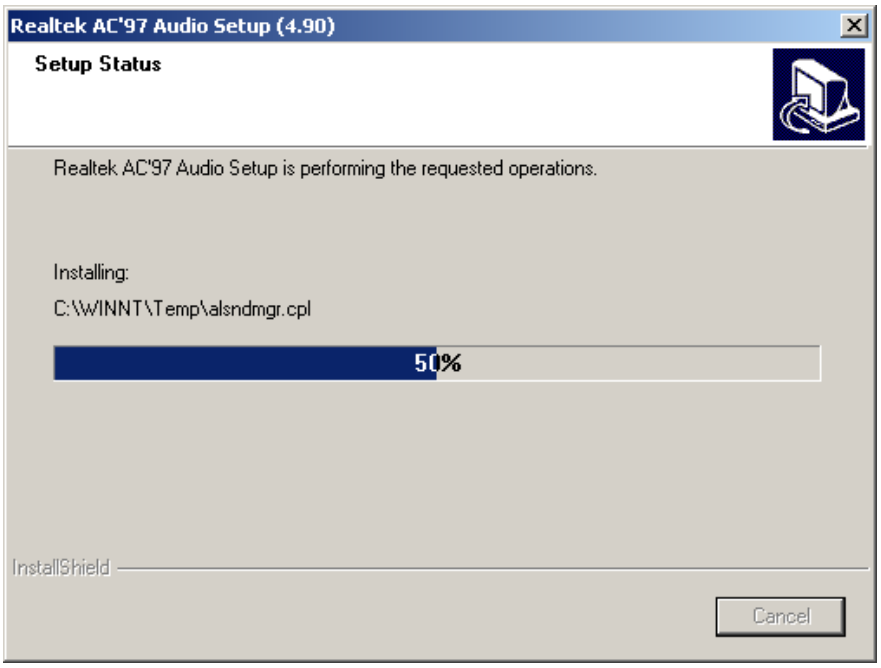


Figure 6-21: Audio Driver Setup Preparation

Step 4: At this stage the **Digital Signal Not Found** screen appears (**Figure 6-22**). Click **YES** to continue.

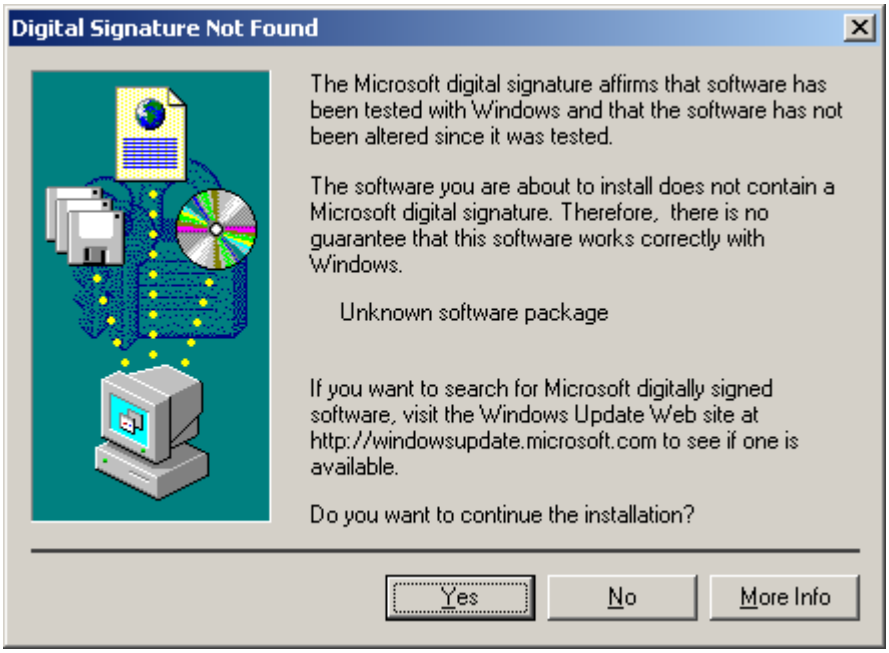

Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
Unknown software package
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info

Figure 6-22: Audio Driver Digital Signal

Step 5: The audio driver installation continues (**Figure 6-23**).

Figure 6-23: Audio Driver Installation Continues

Step 6: After the driver installation process is complete, a confirmation screen appears (**Figure 6-24**).

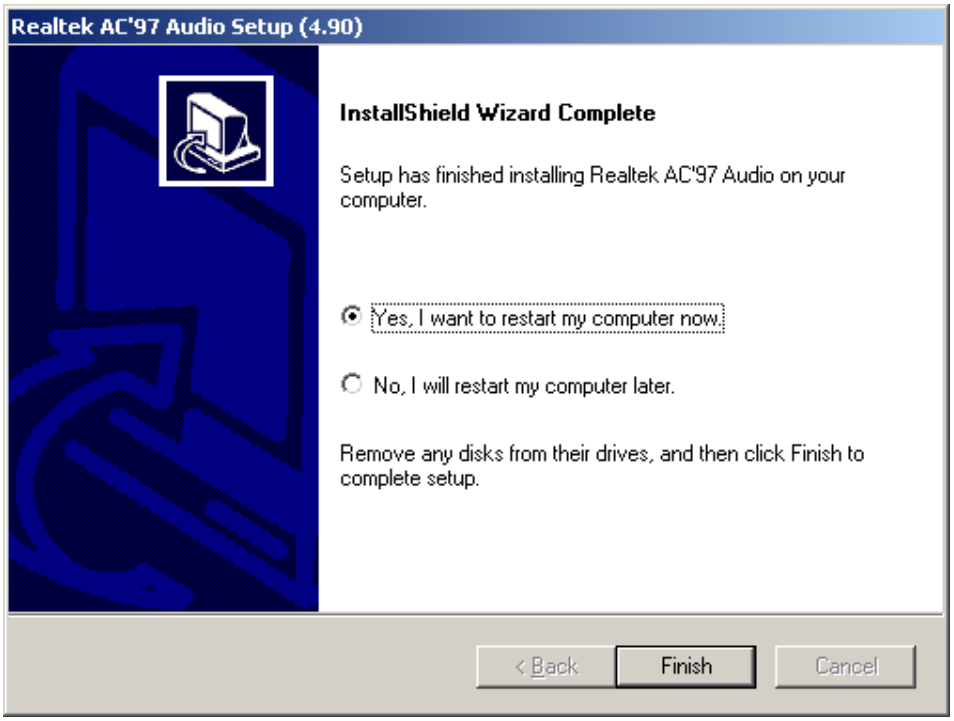

Realtek AC'97 Audio Setup (4.90)
InstallShield Wizard Complete
Setup has finished installing Realtek AC'97 Audio on your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

Figure 6-24: Audio Driver Installation Complete

Step 7: The confirmation screen offers the option of restarting the computer now or later. For the settings to take effect, the computer must be restarted. Click **FINISH** to restart the computer.

6.7 ALi SATA/RAID Driver

To install the ALi SATA/RAID driver, please follow the steps below.

Step 1: Insert the CD into the system that contains the PCISA-8450. Open the **X:\5-SATA RAID** directory (where **X:** is the system CD drive) and double-click the **setup.exe** installation file.

Step 2: The **Install Shield Wizard** (**Figure 6-25**) is prepared to guide the user through the rest of the process.

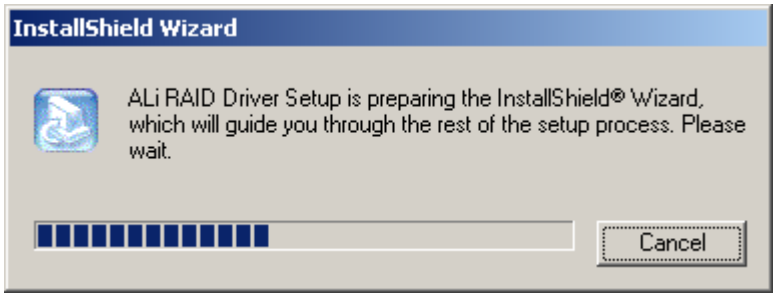

InstallShield Wizard
ALi RAID Driver Setup is preparing the InstallShield® Wizard, which will guide you through the rest of the setup process. Please wait.
Cancel

Figure 6-25: RAID Driver Preparing Setup Screen

Step 3: Once initialized, the **Install Wizard** welcome screen appears (**Figure 6-26**).

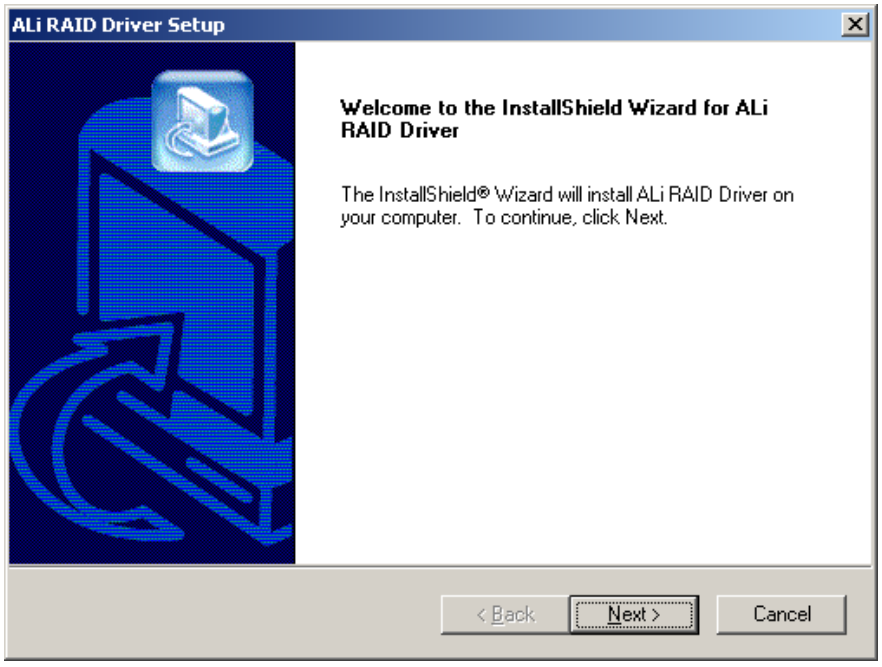

ALi RAID Driver Setup
Welcome to the InstallShield Wizard for ALi RAID Driver
The InstallShield® Wizard will install ALi RAID Driver on your computer. To continue, click Next.
< Back
Next >
Cancel

Figure 6-26: RAID Driver Install Wizard Welcome Screen

Step 4: Click **NEXT** to continue the installation or **CANCEL** to stop the installation.

Step 5: The **Install Wizard** starts to install the driver (**Figure 6-27**).

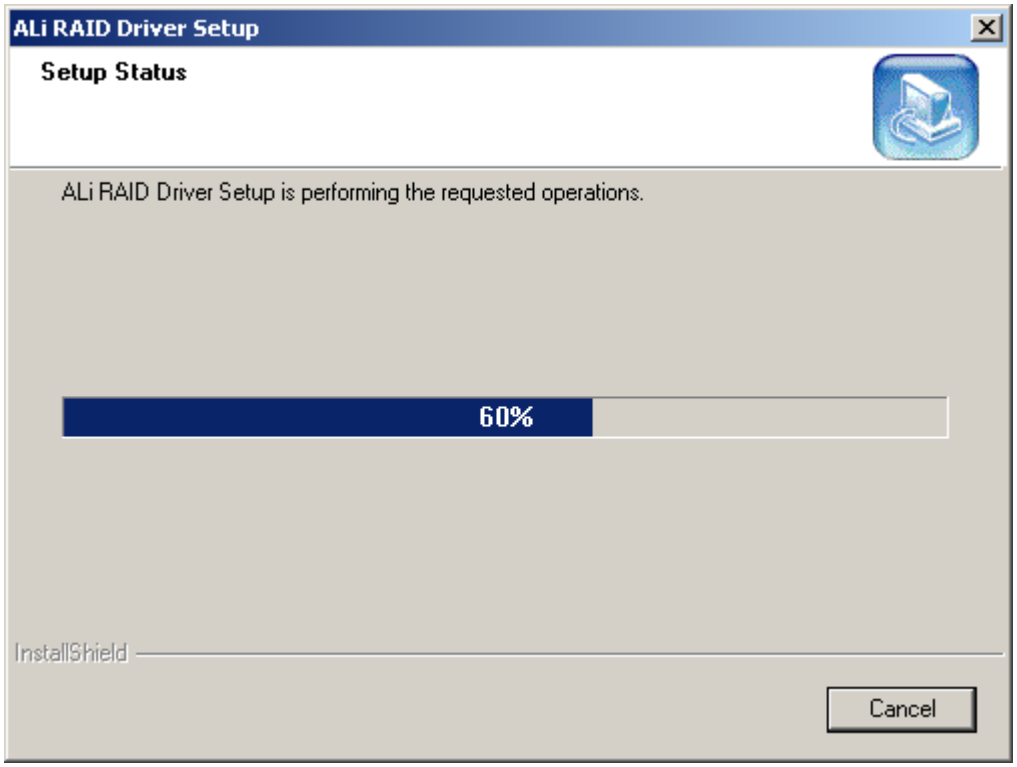


Figure 6-27: RAID Driver Installing Screen

Step 6: A **Digital Signal Not Found** screen appears (**Figure 6-28**). Click **YES** to continue the installation process.

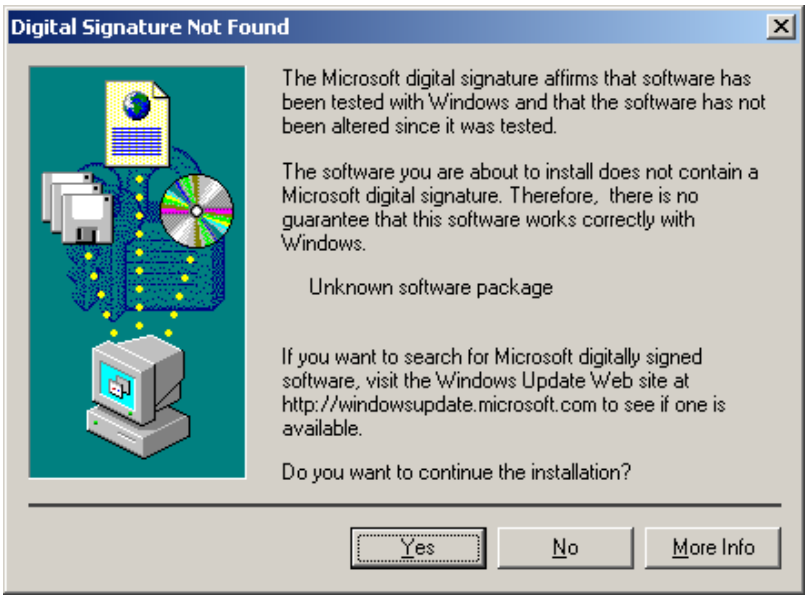

Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
Unknown software package
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info

Figure 6-28: RAID Driver Digital Signal

Step 7: Once the installation is complete, the **InstallShield Wizard Complete** screen appears (**Figure 6-29**).

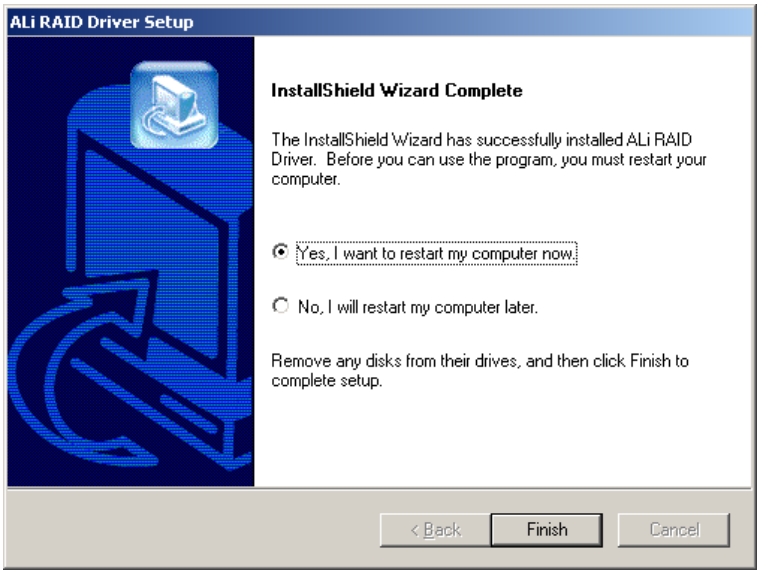

ALi RAID Driver Setup
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed ALi RAID Driver. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

Figure 6-29: InstallShield Wizard Complete Screen

Step 8: Once the installation process is complete, the computer may be restarted immediately or later. For the settings to take effect, the computer must be restarted. Click **FINISH** to restart the computer.

Appendix

A

BIOS Configuration Options

A.1 BIOS Configuration Options

Below is a list of BIOS configuration options described in **Chapter 5**.

- ➔ **Change User Password** 86
- ➔ **Change Supervisor Password** 87
- ➔ **Auto Configuration with Optimal Settings** 87
- ➔ **Auto Configuration with Fail Safe Settings** 87
- ➔ **Save Settings and Exit** 87
- ➔ **Exit Without Saving** 87
- ➔ **Base Memory** 88
- ➔ **Extd Memory** 88
- ➔ **Date [mm:dd:yyyy]** 89
- ➔ **Time [hh/mm/ss]** 89
- ➔ **Floppy Drive A: [1.44 MB 3½]** 89
- ➔ **Floppy Drive B: [Not Installed]** 89
- ➔ **Pri Master, Pri Slave, Sec Master and Sec Slave** 89
- ➔ **Type [Auto]** 90
- ➔ **ZIP** 90
- ➔ **LS-120** 90
- ➔ **Size** 91
- ➔ **Cyln** 91
- ➔ **Head** 91
- ➔ **Wpcom** 91
- ➔ **Sec** 91
- ➔ **LBA Mode [On]** 91
- ➔ **Blk Mode [On]** 92
- ➔ **PIO Mode [Auto]** 92
- ➔ **32Bit Mode [Off]** 92
- ➔ **Boot Sector Virus Protection [Disabled]** 93
- ➔ **Quick Boot [Disabled]** 95
- ➔ **1st Boot Device [Disabled]** 95
- ➔ **2nd Boot Device [Disabled]** 95

➔ 3rd Boot Device [Disabled] 95
➔ Try Other Boot Devices [Yes] 96
➔ S.M.A.R.T. for Hard Disks [Disabled] 96
➔ BootUp Num-Lock [On] 96
➔ Floppy Drive Swap [Disabled] 97
➔ Floppy Drive Seek [Disabled] 97
➔ PS/2 Mouse Support [Enabled] 98
➔ Password Check [Setup] 98
➔ BIOS Protect [Normal] 98
➔ Spread Spectrum Function [Disabled] 98
➔ Boot to OS/2 [No] 99
➔ L1 Cache [Enabled] 99
➔ L2 Cache [Disabled] 99
➔ System BIOS Cacheable [Disabled] 99
➔ C000, 32k Shadow [Cached] 100
➔ C800, 16k Shadow [Disabled] 100
➔ CC00, 16k Shadow [Disabled] 101
➔ D000, 16k Shadow [Disabled] 101
➔ D400, 16k Shadow [Disabled] 101
➔ D800, 16k Shadow [Disabled] 102
➔ DC00, 16k Shadow [Disabled] 102
➔ SDRAM Frequency [200mhZ] 103
➔ Configure SDRAM Timing by SPD [Disabled] 104
➔ SDRAM CAS# Latency [2.5 Clocks] 104
➔ SDRAM RAS# Precharge [3 clocks] 104
➔ SDRAM RAS# to CAS# Delay [3 Clocks] 105
➔ SDRAM Precharge Delay [7 clocks] 105
➔ SDRAM Burst Length [4] 105
➔ Memory Hole [Disabled] 106
➔ Hyper Threading Function [Disabled] 106
➔ MPS Revision [1.1] 106
➔ APIC ACPI SCI IRQ [Disabled] 106

➔ Internal Graphics Mode Select [1MB] 107
➔ AGP Aperture Size [64MB] 107
➔ USB Controller [Disabled] 107
➔ USB 1.1 Device Legacy Support 108
➔ USB 1.1 Port 64/60 Emulation [Disabled] 108
➔ Power Type [AT] 110
➔ ACPI Aware O/S [Yes] 110
➔ Restore on AC Power Loss [Last State] 110
➔ Power Button Function [On/Off] 110
➔ Power Management/APM [Disabled] 111
➔ Video Power Down Mode [Disabled] 111
➔ Hard Disk Power Down Mode [Disabled] 111
➔ Standby Time Out (Minute) [Disabled] 112
➔ Suspend Time Out (Minute) [Disabled] 112
➔ Throttle Slow Clock Ratio [50%] 113
➔ FDC/LPT/COM Ports [Monitor] 113
➔ MIDI Ports [Ignore] 114
➔ Primary Master IDE [Monitor] 114
➔ Primary Slave IDE [Ignore] 114
➔ Secondary Master IDE [Monitor] 115
➔ Secondary Slave IDE [Ignore] 115
➔ System Thermal [Disabled] 116
➔ Thermal Active Temperature [65°C/149°F] 116
➔ Thermal Slow Clock Ratio [50%] 116
➔ Resume On Ring [Disabled] 117
➔ Resume On Lan [Disabled] 117
➔ Resume On PME# [Disabled] 117
➔ Resume On RTC Alarm [Disabled] 118
➔ RTC Alarm Date (Days) 118
➔ RTC Alarm Hour (Hours) 118
➔ RTC Alarm Minute (Minutes) 118
➔ RTC Alarm Second (Seconds) 118

➔ Plug and Play Aware O/S [No] 119
➔ Clear NVRAM [No] 120
➔ PCI Latency Timer [32] 120
➔ PCI IDE BusMaster [Disabled] 120
➔ DMA Channel# [PnP] 120
➔ IRQ# [PCI/PnP] 121
➔ OnBoard IDE [Both] 122
➔ OnBoard AC'97 Audio [Disabled] 123
➔ OnBoard MC'97 Modem [Disabled] 123
➔ OnBoard FDC [Auto] 123
➔ OnBoard Serial Port1 [3F8/COM1] 123
➔ OnBoard Serial Port2 [2F8/COM2] 124
➔ Serial Port2 Mode [Normal] 124
➔ OnBoard Parallel Port [378] 125
➔ Parallel Port Mode [ECP] 125
➔ Parallel Port IRQ [IRQ7] 126
➔ Parallel Port DMA Channel [3] 126
➔ CPU FAN Mode: [Full On] 127
➔ Fan Off Temperature: Always Start, 15ºC, 20ºC (Default) or 25ºC 127
➔ Fan-Start Temperature: 30ºC, 35ºC, 40ºC (Default) or 45ºC 128
➔ Fan-Full Running Temperature: 50ºC, 55ºC (Default), 60ºC or 65ºC 128
➔ PWM slope: 128
➔ PWM Value: 128
➔ PWM Value: 128

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Appendix

B

Watchdog Timer

NOTE:

The following discussion applies to DOS environment. Contact IEI support or visit the IEI website for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, Watchdog Timer will either perform a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table B-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer will start counting down. While the timer value reaches zero, the system will reset. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the Watchdog timer will be disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

NOTE:

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system will reset.

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

        MOV     AX, 6F02H       ;setting the time-out value
        MOV     BL, 30                  ;time-out value is 48 seconds
        INT      15H
 ;
; ADD YOUR APPLICATION PROGRAM HERE
;
        CMP      EXIT_AP, 1             ;is your application over?
        JNE       W_LOOP        ;No, restart your application

        MOV     AX, 6F02H       ;disable Watchdog Timer
        MOV     BL, 0           ;
        INT      15H
;
; EXIT ;
```

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Appendix

C

Address Mapping

C.1 I/O Address Map

I/O Address Range	Description
000-01F	DMA Controller
020-021	Interrupt Controller
040-043	System time
060-06F	Keyboard Controller
070-07F	System CMOS/Real time Clock
080-09F	DMA Controller
0A0-0A1	Interrupt Controller
0C0-0DF	DMA Controller
0F0-0FF	Numeric data processor
1F0-1F7	Primary IDE Channel
2F8-2FF	Serial Port 2 (COM2)
378-37F	Parallel Printer Port 1 (LPT1)
3B0-3BB	Intel(R) Graphics Controller
3C0-3DF	Intel(R) Graphics Controller
3F6-3F6	Primary IDE Channel
3F7-3F7	Standard floppy disk controller
3F8-3FF	Serial Port 1 (COM1)

Table C-1: I/O Address Map

C.2 1st MB Memory Address Map

Memory address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
F0000-FFFFF	System BIOS
1000000-	Extend BIOS

Table C-2: 1st MB Memory Address Map

C.3 IRQ Mapping Table

IRQ#	Description	IRQ#	Description
IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	ACPI
IRQ2	Available	IRQ10	LAN
IRQ3	COM2	IRQ11	LAN/USB2.0/SATA
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	SMBus Controller	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Available	IRQ15	Secondary IDE

Table C-3: IRQ Mapping Table

C.4 DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8-bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

Table C-4: IRQ Mapping Table

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Appendix

D

External AC'97 Audio CODEC

D.1 Introduction

The audio functionalities of the PCISA-8450G CPU come with an onboard Realtek ALC655 16-bit, full duplex AC'97 2.3 compatible audio CODEC with 48KHz sampling rate. The CODEC is accessed through one phone jack connector and two three-pin headers including:

1. A LINE input shared with surround output
2. A MIC input shared with Center and LFE output
3. A LINE output
4. A MIC input line.

The ALC655 supports host/soft audio from Intel ICHx chipsets as well as audio controller based VIA/SIS/Ali/ATI chipset with bundled Windows series drivers (XP/ME/2000/98/NT), EAX/Direct Sound 3D/I3DL2/A3D compatible sound effect utilities supporting Karaoke, 26 kinds of environment sound emulations with 10-band equalizer, and HRTF 3D positional audio. The audio kit provides an excellent entertainment package sufficient for today's multimedia systems.

D.2 Driver Installation

The driver installation has been described in **Chapter 6**, **Section 6.6**.

After reboot, the sound effect configuration utility should be in the Windows Control Panel (**Figure D-1**), and if peripheral speakers have been properly connected, hear the sound effects.

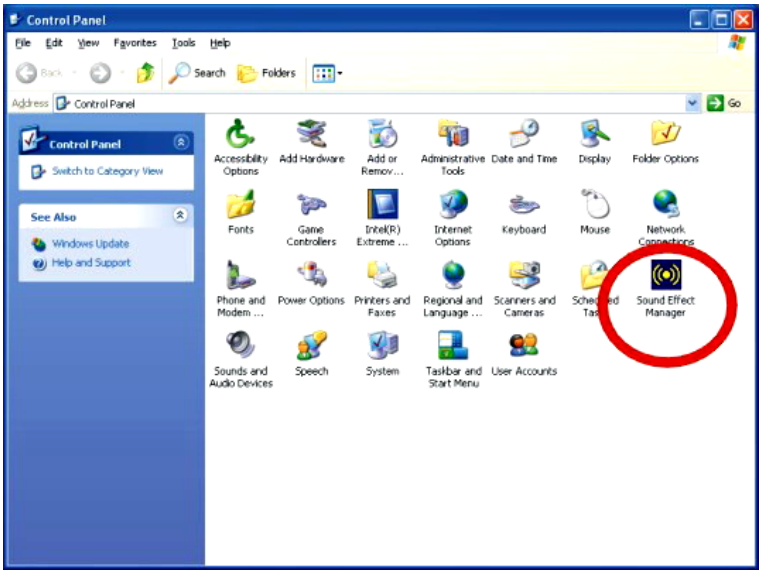


Figure D-1: Sound Effect Manager Icon

D.3 Sound Effect Configuration

After installing the audio CODEC driver, the multi-channel audio features are available for use. Click the audio icon from the Notification Area from system task bar (**Figure D-3**). The shortcut to the configuration utility is also available through the **Sound Effect Manager** icon in the **Control Panel** (**Figure D-2**).

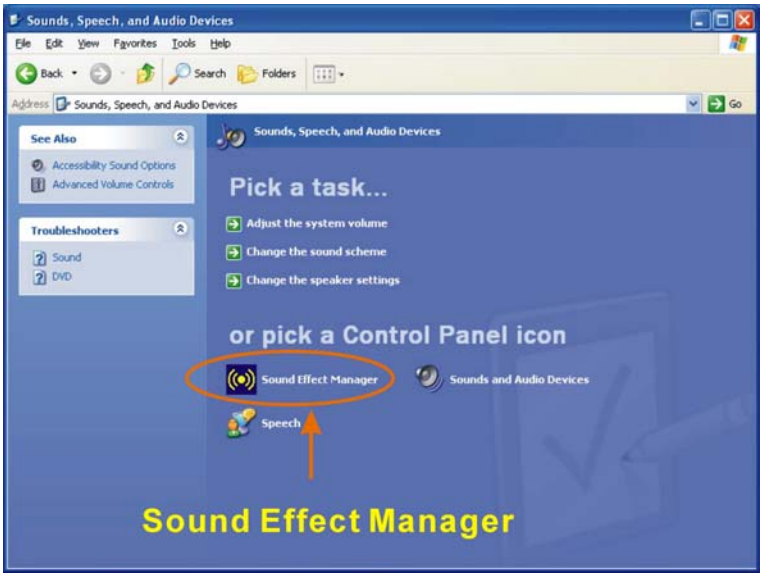


Figure D-2: Sound Effect Manager Icon [Control Panel]

Figure D-3: Sound Effect Manager Icon [Task Bar]

D.4 Sound Effect

Select a pre-configured sound environment setting with the preset equalizer settings, load an equalizer setting, or make a new equalizer setting using the **Load EQ Setting** and **Save Preset** buttons (**Figure D-5**).

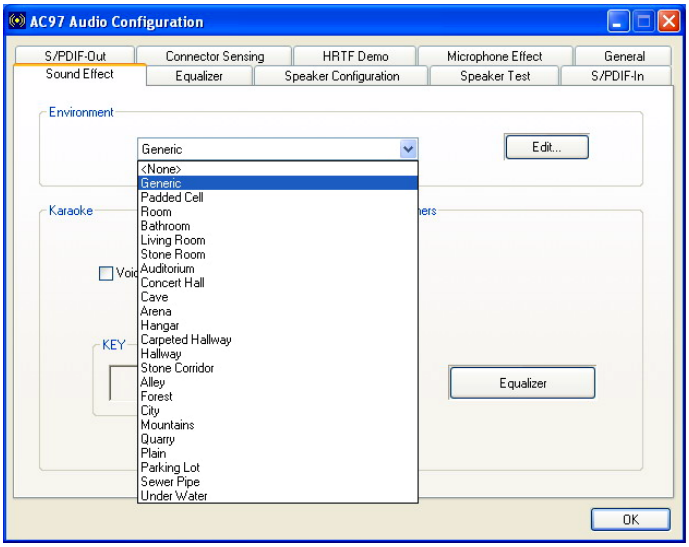


Figure D-4: Setting Sound Effects

D.5 Environment Simulation

This is the default screen whenever the configuration utility is opened.

Select different sound environment modes by a single click on the Environment pull-down list. There are a total of 23 preset environment modes (See **Figure D-5**). Fine-tune the environment setting by clicking the **Edit** button, which displays an editor window. Select a preset mode, and then select one of the property values from the list below by a single

click. Use the scroll bar to adjust the properties' settings. When the adjustment is done, click the **Save** button to proceed.

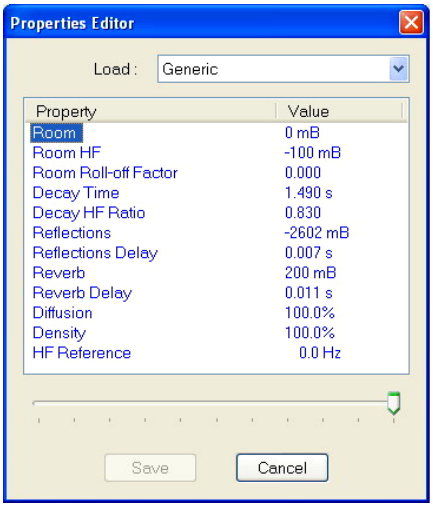


Figure D-5: Sound Effects Properties Editor

D.6 Karaoke Mode

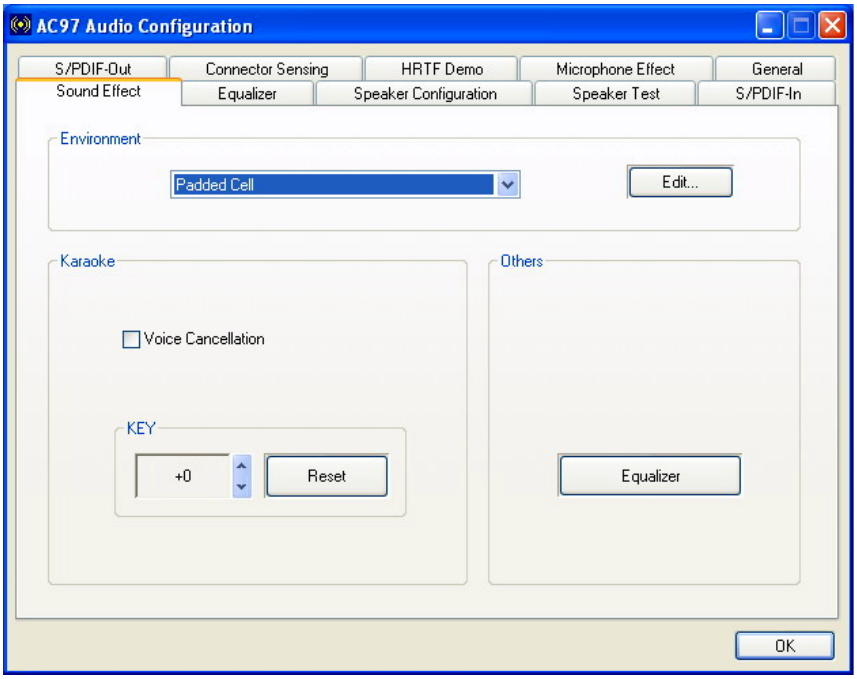


Figure D-6: Karaoke Mode

Karaoke mode (**Figure D-6**) eliminates the vocal track of the music. The configuration options that come with the Karaoke function include:

Voice Cancellation: Disables the vocal part of the music while the background music remains.

Key adjustment: Click the arrows to find a key that fits the vocal range.

NOTE:

The Equalizer button on the default display displays the same configuration window as the Equalizer tab.

D.7 Equalizer Selection

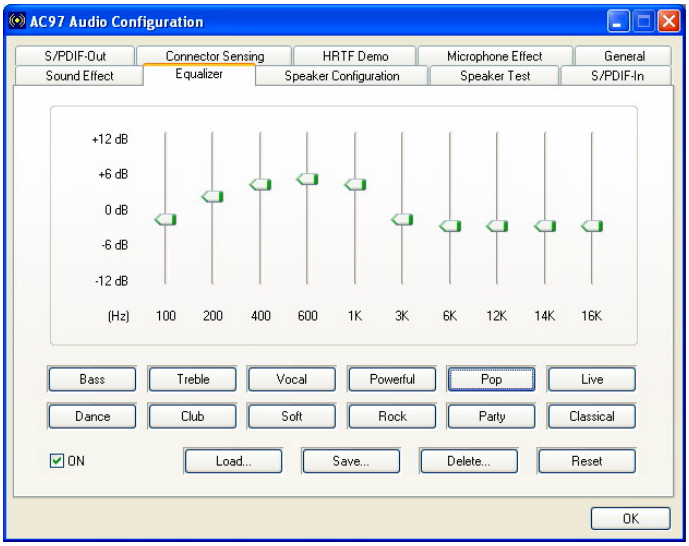


Figure D-7: Equalizer Settings

The equalizer (**Figure D-7**) changes the sound effect parameters. The default screen shows the equalized values. Preset modes may be selected from the buttons below. The configurable values include 10 bands of equalizer ranging from 100Hz to 16KHz. Use the scroll bars to fine-tune each setting, and use the **Load**, **Save**, **Delete**, and **Reset** buttons to edit the settings.

D.8 Speaker Configuration

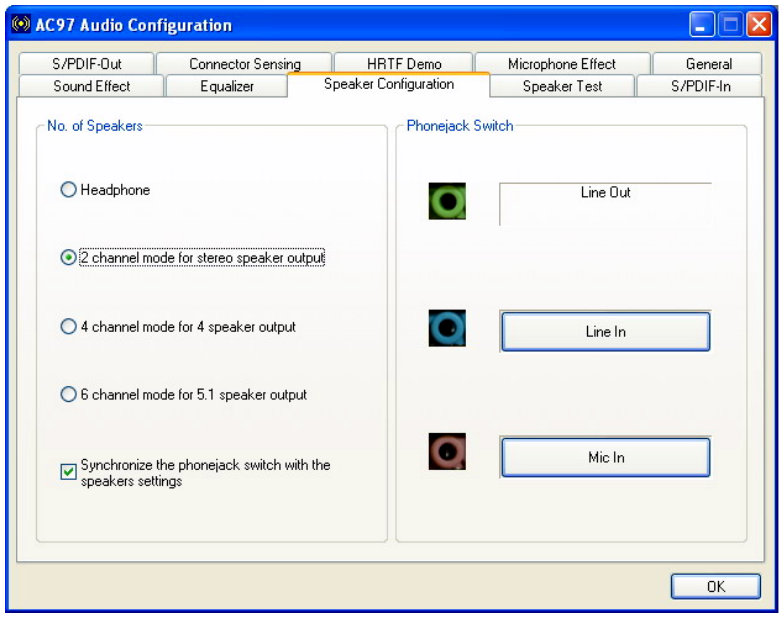


Figure D-8: Speaker Configuration

The speaker configuration tab (**Figure D-8**) configures the multi-channel speaker settings. Select the appropriate audio configuration from the **No. of Speakers**.

The configurable options are:

- Headphone
- Channel mode for stereo speaker output
- Channel mode for 4 speaker output
- Channel mode for 5.1 speaker output
- Synchronize the phonejack switch with speakers settings

Select the appropriate speaker configuration, and then click **OK** to apply the configuration change.

Connect speakers to the corresponding phonejack switch. Write down the speaker configuration and power off the system before completing the physical connections.

Select from the **Phonejack Switch** section to re-define the phonejacks. Click the specific phonejack button to change its input/output functionality.

D.9 Speaker Test

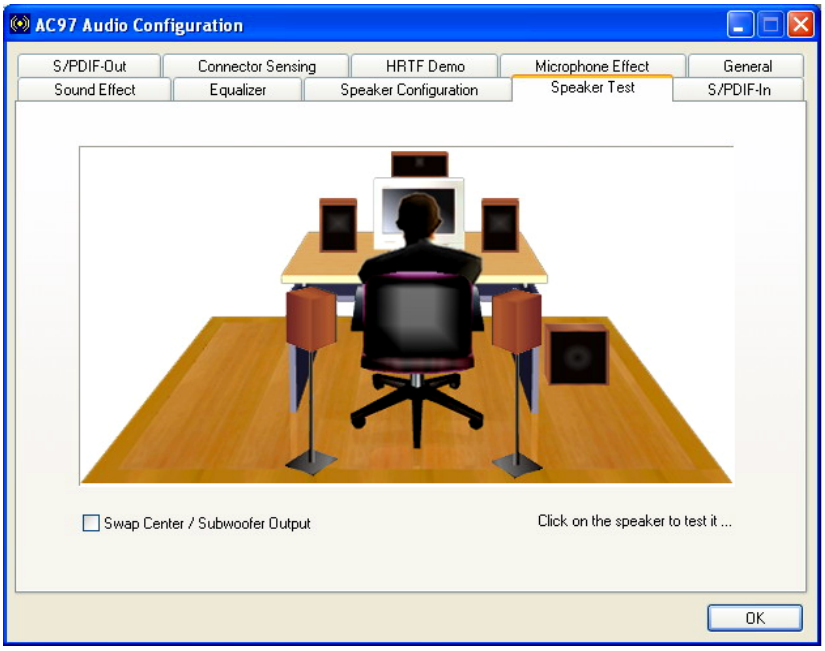


Figure D-9: Audio Configuration

The audio configuration window (**Figure D-9**) tests each connected speaker to see if the 4-channel or 6-channel audio operates properly. If any speaker malfunctions, check the cabling or replace the malfunctioning parts.

Select each specific speaker to test its functionality. The selected speaker is highlighted and a sound should be heard.

NOTE:

1. The test scenario that appears in the **Speaker Test** window corresponds to the number of speakers selected in the **Sound Effect** window.
2. Select and deselect the **Swap Center/Subwoofer Output** check box to see if these two devices properly work.

D.10 S/PDIF-In & S/PDIF-Out

These functions are currently not supported.

D.11 Connector Sensing

Figure D-10: Connector Sensing

Realtek ALC655 supports Jack Sensing functionality. If an audio device is plugged into the wrong connector, a warning message will be displayed informing the user to correct the physical connections.

Click the **Start** button (**Figure D-10**) to start the sensing. Please remember to close all running audio-related programs before executing the sensing operation.

The EZ-Connection screen (**Figure D-11**) shows the result of sensing test.

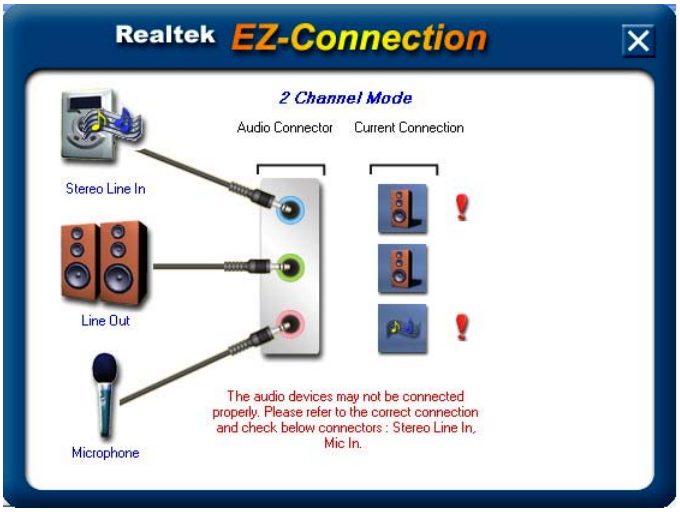

Realtek EZ-Connection
2 Channel Mode
Audio Connector
Current Connection
Stereo Line In
Line Out
Microphone
The audio devices may not be connected properly. Please refer to the correct connection and check below connectors : Stereo Line In, Mic In.

Figure D-11: EX Connection

The **Audio Connector** column shows the settings used in the **Speaker Configuration** window.

The **Current Connection** column shows the types of devices detected during test. If the result does not match the physical connection, an exclamation mark will appear (**Figure D-12**).

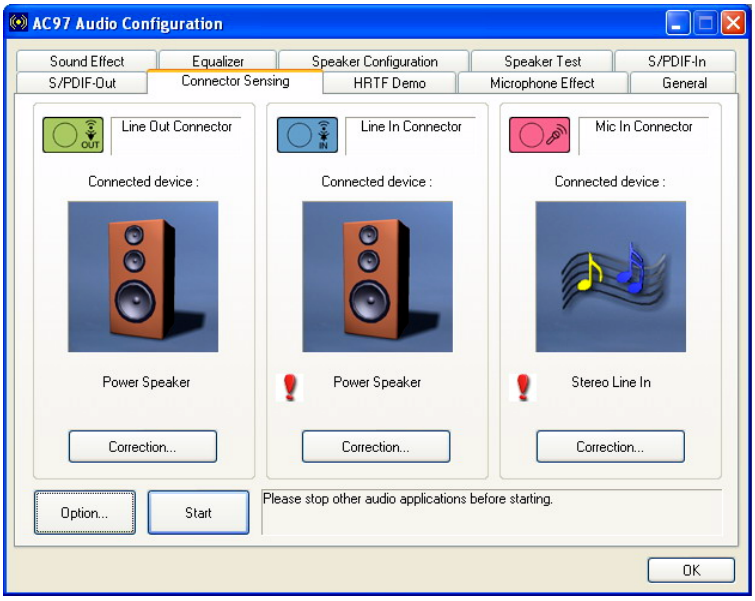


Figure D-12: Connector Sensing Test Result

After closing the **EZ-Connector** screen, the following window (**Figure D-12**) should appear showing the latest connection status.

D.12 HRTF Demo

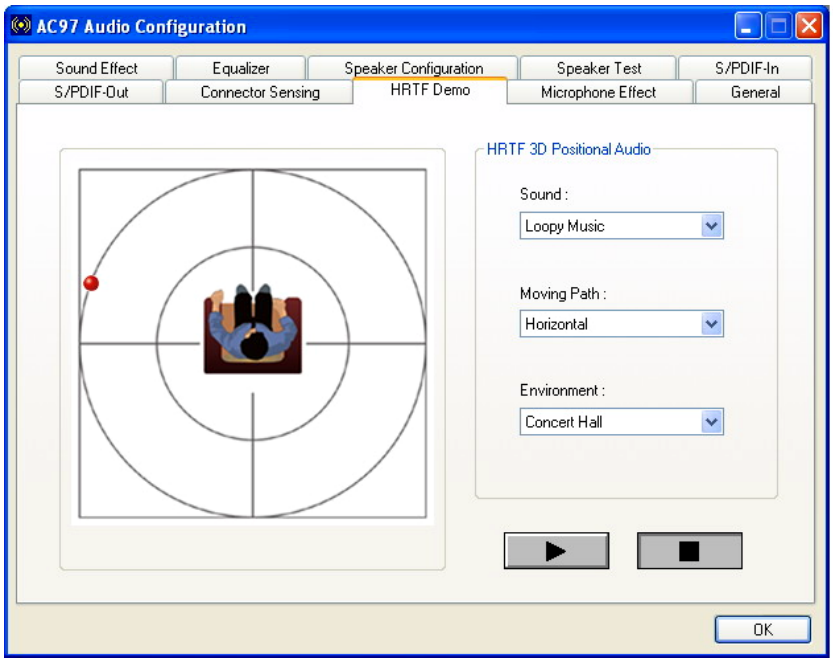


Figure D-13: HRTF Demo

The HRTF window (**Figure D-13**) adjusts the HRTF (Head Related Transfer Functions) 3D positional audio before playing 3D applications. Select a preferred **Environment** mode and/or different **Sound** and **Moving Path** settings.

D.13 Microphone Effect

This tab provides optional **Noise Suppression**. Select the check box to enable this function.

D.14 General

The general tab (**Figure D-14**) provides information about the AC'97 audio configuration utility including **Audio Driver** version, **DirectX** version, **Audio Controller** and **AC'97 Codec**. Change the language of this utility through the **Language** pull-down menu.

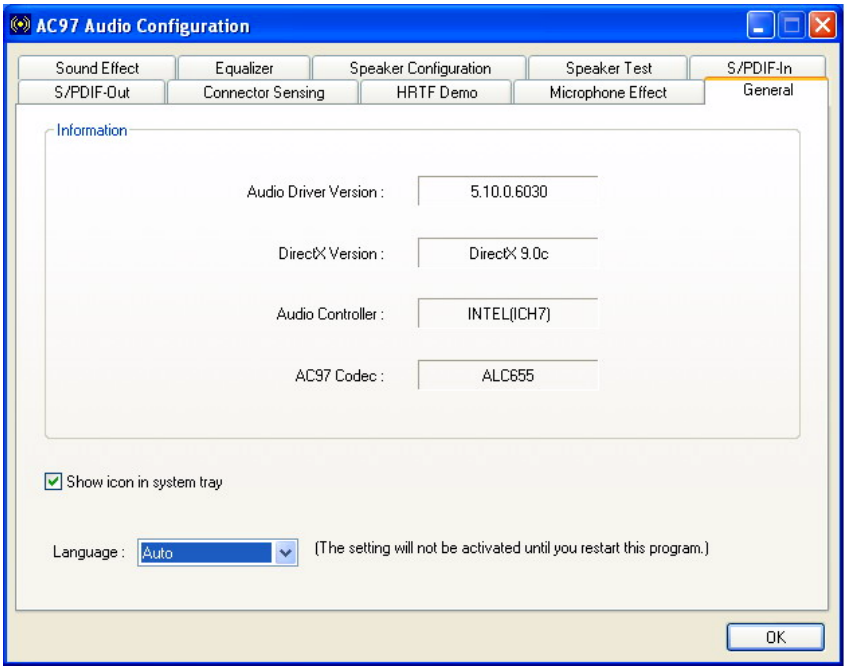


Figure D-14: General

Appendix

E

ALi® RAID for SATA

E.1 Introduction

The ALi M5283 SATA RAID chipset can control parallel ATA (PATA) and serial ATA (SATA) disks. The ALi controller supports PATA UDMA transfer mode up to mode 6 and SATA 1 disk drives. The ALi M5283 also has a cost-effective RAID functionality that can increase the data read/write speed and provide protection to data by distributing mirrored duplicates of data onto two disk drives (RAID 1).

CAUTION!

A configured RAID volume (which may consist of multiple hard drives) appears to an operating system as a contingent storage space. The operating system will not be able to distinguish the physical disk drives contained in a RAID configuration.

E.1.1 Precautions

One key benefit a RAID configuration brings is that a single hard drive can fail within a RAID array without damaging data. With RAID1 array, a failed drive can be replaced and the RAID configuration restored.

WARNING!

Irrecoverable data loss occurs if a working drive is removed when trying to remove a failed drive. It is strongly recommended to mark the physical connections of all SATA disk drives. Drive locations can be identified by attaching stickers to the drive bays. If a drive member of a RAID array should fail, the failed drive can then be correctly identified.

CAUTION!

Do not accidentally disconnect the SATA drive cables. Carefully route the cables within the chassis to avoid system down time.

E.2 Features and Benefits

- Supports RAID levels 0, 1, and JBOD
- Supports connectivity to two disk drives
- Supported Operating Systems include: Windows 98/Me, Windows 2000 and Windows XP
- Windows-based software for RAID management

E.3 Accessing the ALi RAID Utility

To access the **Ali RAID Utility**, please follow the steps below:

Step 1: **Connect SATA drives to the system**. Connect two SATA drives to the system. Make sure the drives have the same capacity, are the same type and have the same speed.

NOTE:

Make sure the SATA drives are EXACTLY the same when they are configured in a RAID configuration (JBOD, RAID 0 or RAID 1). If they are not the same size, disk drive capacity is sacrificed and overall performance affected.

Step 2: **Enable SATA drives in BIOS**. Start the computer and access the **AMI BIOS** setup program. Next, open the **Advanced CMOS Setup** menu. Enable the **SATA ROM Support BIOS** option.

Step 3: **Save and Exit BIOS**. After the **SATA ROM Support BIOS** option is enabled, save and exit the **BIOS**.

Step 4: **Reboot the system**. Reboot the system after saving and exiting the **BIOS**.

Step 5: **Press Ctrl-A**. When the screen in **Figure 6-30** appears press **Ctrl-A** to enter the **ALi RAID BIOS** setup program.

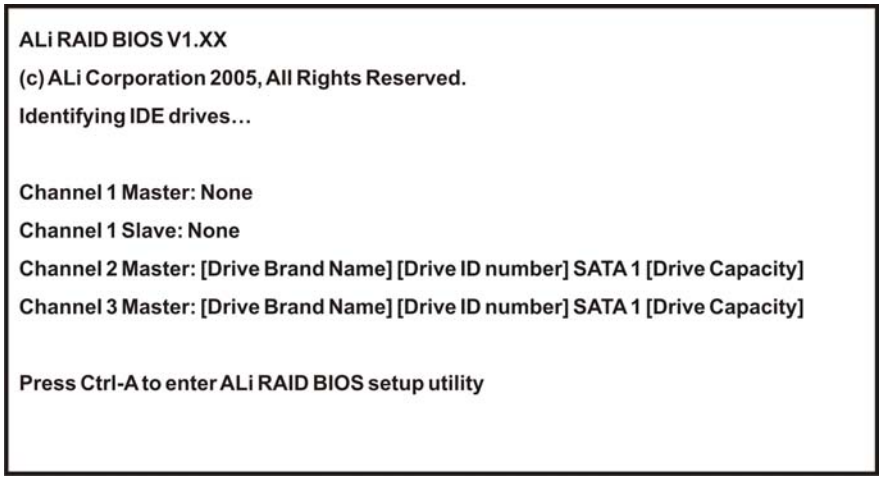

ALi RAID BIOS V1.XX
(c) ALi Corporation 2005, All Rights Reserved.
Identifying IDE drives...
Channel 1 Master: None
Channel 1 Slave: None
Channel 2 Master: [Drive Brand Name] [Drive ID number] SATA 1 [Drive Capacity]
Channel 3 Master: [Drive Brand Name] [Drive ID number] SATA 1 [Drive Capacity]
Press Ctrl-A to enter ALi RAID BIOS setup utility

Figure 6-30: Accessing ALi RAID BIOS Utility

Step 6: **Delete RAID settings and partitions**. The **RAID BIOS Setup Utility** in **Figure 6-31** appears. Before configuring the array select the "**Delete All RAID Setting & Partition**".

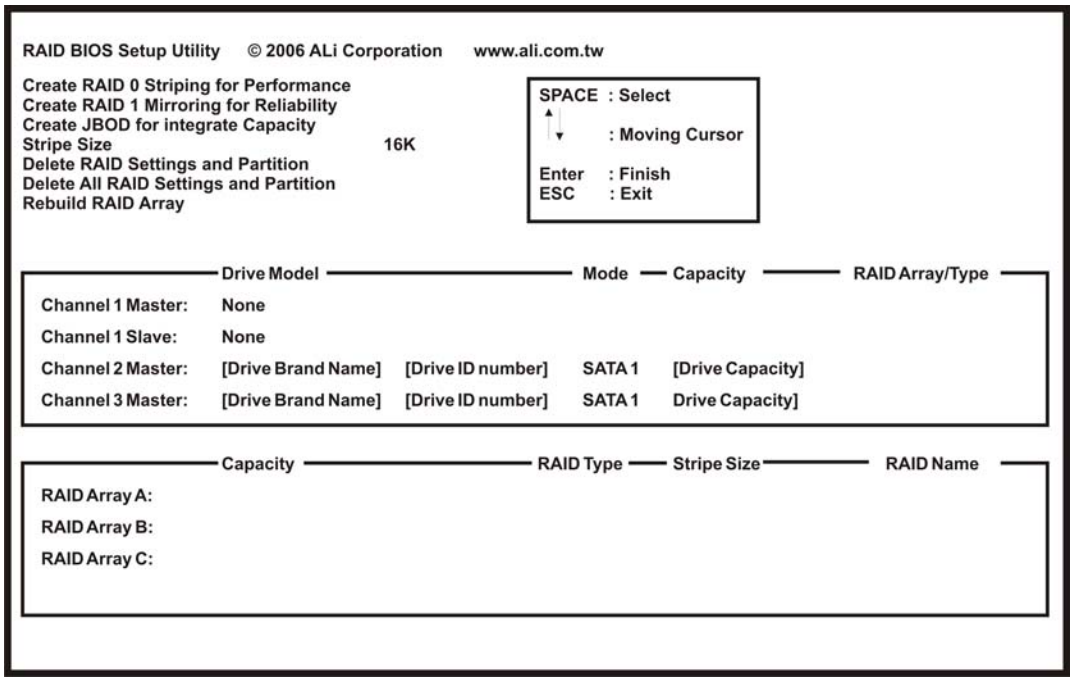

RAID BIOS Setup Utility © 2006 ALi Corporation www.ali.com.tw
Create RAID 0 Striping for Performance
Create RAID 1 Mirroring for Reliability
Create JBOD for integrate Capacity
Stripe Size 16K
Delete RAID Settings and Partition
Delete All RAID Settings and Partition
Rebuild RAID Array
SPACE : Select
: Moving Cursor
Enter : Finish
ESC : Exit
Drive Model Mode Capacity RAID Array/Type
Channel 1 Master: None
Channel 1 Slave: None
Channel 2 Master: [Drive Brand Name] [Drive ID number] SATA 1 [Drive Capacity]
Channel 3 Master: [Drive Brand Name] [Drive ID number] SATA 1 Drive Capacity]
Capacity RAID Type Stripe Size RAID Name
RAID Array A:
RAID Array B:
RAID Array C:

Figure 6-31: RAID BIOS Setup Utility

Step 7: **Configure the RAID settings**. Use the **RAID BIOS Setup Utility** in **Figure 6-31** to configure the RAID array. Brief descriptions are given below.

Step 8: **Install the OS**. After the RAID array has been configured (see below) install the OS. To do this, please refer to the documentation that came with the OS.

E.4 RAID Options:

E.4.1 Create RAID 0 Striping for Performance

WARNING!

All data previously stored on the member drives of a RAID configuration **are destroyed** during the RAID initialization process. If “used” drives are used to create a RAID array, make sure the data has been moved or backed up before creating a RAID array out of the disk drives.

Step 1: **Select “Create RAID 0 Striping for Performance”**. Use the arrow keys to highlight **Create RAID0 Striping for Performance** and press **ENTER**. A flashing

'S' appears on the **Drive Menu** where the member drives to be included in the RAID 0 array can be chosen.

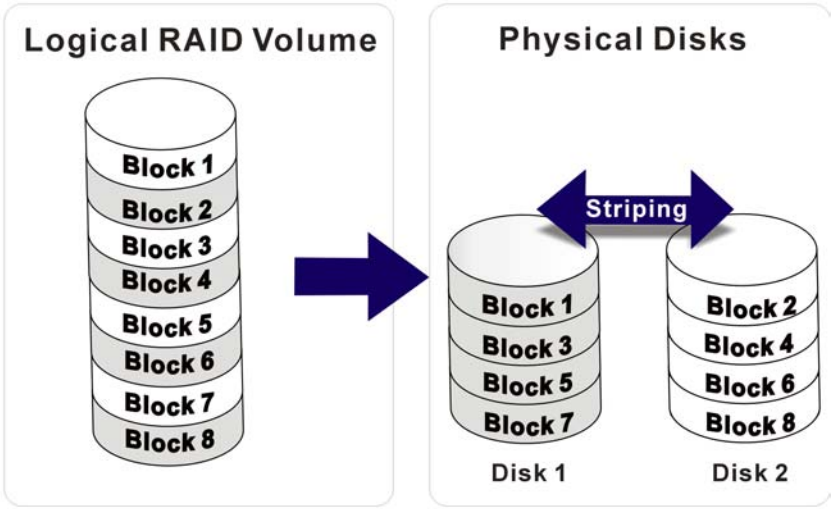
Step 2: **Select RAID array drive members**. Use the space bar to select members of the RAID array. The flashing cursor changes to a lower case 's' once any of the connected disk drives has been selected. Follow the same method to select another member drive.

Step 3: **Confirm**. The **Create RAID0(Y/N)** confirm box appears. Press **Y**.

Step 4: **Name the array**. Enter a nickname for the created array. Upper and lower case alphabetic, numeric, space, and underscore characters are all applicable for naming an array.

NOTE:

1. To reduce the chance of losing data, ALi imposes certain limitations on the RAID configuration options. PATA drives connected on the same IDE channel cannot be selected as the members of a RAID 0 array. Avoid mixing PATA and SATA disk drives in a RAID 0 array.
2. Always use disk drives of the same capacity to create a RAID array. The excessive capacity of a larger disk drive cannot be utilized because data stripes are equally distributed across all members of a RAID array.



E.4.2 Create RAID 1 Mirroring for Reliability

WARNING!

All data previously stored on the member drives of a RAID configuration **is destroyed** during the RAID initialization process. If "used" drives are used to create a RAID array, make sure the data has been moved or backed up before creating a RAID array out of the disk drives.

Step 1: **Select** "**Create RAID 1 Striping for Reliability"**. Use the arrow keys to highlight **Create RAID 1 Striping for Reliability** and press **ENTER**. A flashing 'S' appears on the **Drive Menu** where the member drives to be included in the RAID 0 array can be chosen.

Step 2: **Select RAID array drive members**. Use the space bar to select members of the RAID array. The flashing cursor changes to a lower case 's' once any of the connected disk drives has been selected. Follow the same method to select another member drive.

Step 3: **Confirm**. The **Create RAID0(Y/N)** confirm box appears. Press **Y**.

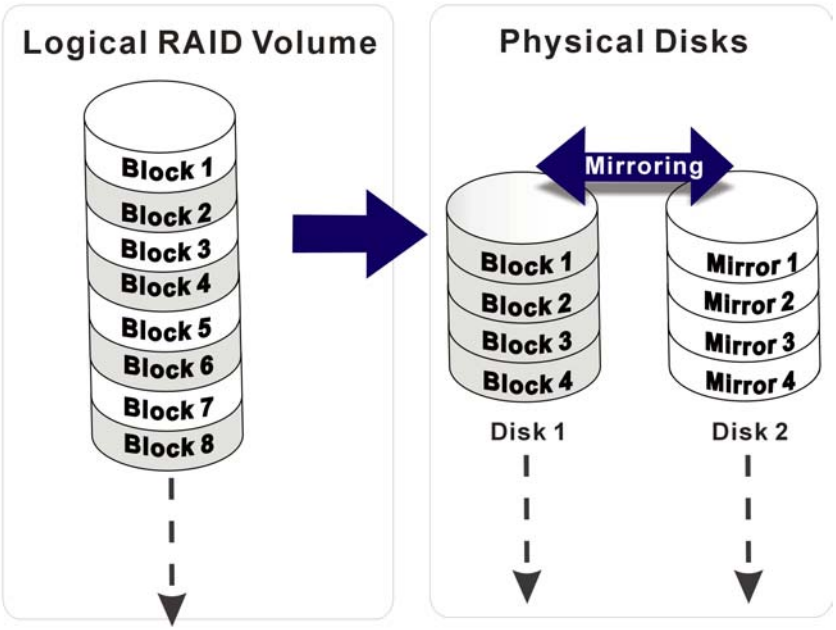
Step 4: **Name the array**. Enter a nickname for the created array. Upper and lower case alphabetic, numeric, space, and underscore characters are all applicable for naming an array

Step 5: **View the array**. A prompt appears to proceed with drive copy. The **Source** and **Destination** drives are indicated as "M" and "m" in the **Drive Menu**.

NOTE:

1. To reduce the chance of losing data, ALi imposes certain limitations on the RAID configuration options. PATA drives connected on the same IDE channel cannot be selected as the members of a RAID 1 array. Avoid mixing PATA and SATA disk drives in a RAID 1 array.

2. Always use disk drives of the same capacity to create a RAID array. The excessive capacity of a larger disk drive cannot be utilized because data stripes are equally distributed across all members of a RAID array.



E.4.3 Create JBOD for Integrated Capacity

JBOD is defined as “Just a Bunch of Drives.” JBOD provides neither performance gains nor data redundancy.

WARNING!

All data previously stored on the member drives of a RAID configuration **is destroyed** during the RAID initialization process. If "used" drives are used to create a RAID array, make sure the data has been moved or backed up before creating a RAID array out of the disk drives.

Step 1: **Select "Create JBOD for Integrated Capacity"**. Use the arrow keys to highlight **Create JBOD for Integrated Capacity** and press **ENTER**. A flashing 'J' appears on the **Drive Menu** where the member drives to be included in the JBOD array can be chosen.

Step 2: **Select RAID array drive members**. Use the space bar to select members of the RAID array. The flashing cursor changes to a lower case 's' once any of the connected disk drives has been selected. Follow the same method to select another member drive.

Step 3: **Confirm**. The **Create RAID 0 (Y/N)** confirm box appears. Press **Y**.

Step 4: **Name the array**. Enter a nickname for the created array. Upper and lower case alphabetic, numeric, space, and underscore characters are all applicable for naming an array

NOTE:

To reduce the chance of losing data, ALi imposes certain limitations on the RAID configuration options. Parallel-ATA drives connected on the same IDE channel cannot be selected as the members of a RAID1 array. Avoid mixing Parallel-ATA and Serial-ATA disk drives in a RAID1 array.

E.4.4 Stripe Size

Changing the stripe size effects RAID 0 arrays. Configurable options are:

- 64K (default)
- 32K
- 16K
- 8K
- 4K

Select a small stripe size if the I/Os to the hard drives are small and occur randomly. Choose a larger stripe size if the I/Os are mostly large and come in sequential orders, e.g., A/V playback and editing applications. The default value should be appropriate for most applications.

E.4.5 Delete RAID Setting & Partition

WARNING!

If a RAID configuration is deleted, all data previously stored on the member drives of the RAID configuration will also be deleted.

Step 1: **Delete a RAID setting**. Use the arrow keys to highlight **Delete RAID Setting & Partition** and press **ENTER**. A flashing 'E' appears at the **Drive Menu** where the member drives to be removed can be chosen.

Step 2: **Confirm Delete**. The **Data on RAID drives will be erased (Y/N)** confirm box appears. Press **Y**.

E.4.6 Delete All RAID Setting & Partition

WARNING!

If a RAID configuration is deleted, all data previously stored on the member drives of the RAID configuration will also be deleted.

Step 1: **Delete RAID Settings**. Use the arrow keys to highlight **Delete All RAID Setting & Partition** and press **ENTER**.

Step 2: **Confirm delete**. The **Data on RAID drives will be erased (Y/N)** confirm box appears. Press **Y**.

E.4.7 Rebuild RAID Array

The **Rebuild RAID Array** option can rebuild a RAID array if a member of a RAID configuration should fail. Neither RAID 0 nor JBOD provides data redundancy. The **Rebuild RAID Array** option only applies to RAID1 arrays and is applicable when a member of a RAID1 configuration has failed.

Step 1: **Select Rebuild Array**. Use the arrow keys to highlight **Rebuild RAID Array** and press **ENTER**. A flashing 'R' appears in the list of existing arrays. The source and destination drives will be displayed.

Step 2: **Confirm rebuild array**. Press **Y** to begin the rebuild process.

NOTE:

A status bar will indicate the rebuild progress. Rebuild consumes considerable system resources and the time required for rebuilding a RAID array may vary depending on the size of stored data, disk drive capacity, and drive performance.

E.4.8 Select Boot Drive

Step 1: **Select the Boot Drive**. Use the arrow keys to highlight **Select Boot Drive** and press **ENTER**. A flashing 'A' appears at the **Drive Menu** where the boot drive can be chosen.

Step 2: **Press ENTER**. Press **ENTER** or the space bar to finish the configuration.

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